RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXVI

1ERE PARTIE
PROCÈS-VERBAUX
(OCTOBRE — 1945)

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TRENTE-TROISIÈME RÉUNION

COPENHAGUE — OCTOBRE 1945

BUREAU DU CONSEIL:

Président d'honneur:
*M. Henry G. Maurice, C. B.

Président:
M. le Dr. Johan Hjort.

Vice-Présidents:
M. Martin Knudsen.
M. A. T. A. Dobson.
M. K. A. Andersson.
M. Pierre Tissier.

DÉLÉGUÉS:

Belgique:
*M. H. J. Koch;
Professeur à l'Université de Louvain;
Naamsche Straat 71, Leuven.

Danemark:
M. le Dr. Martin Knudsen;
Membre de la Commission Danoise pour l'Exploration de la Mer; Consultant Hydrographique au Conseil;
Høeghsmindevej 58, Gentofte.
M. le Dr. H. Blegvad;
Directeur de la Station Biologique Danoise, Membre de la Commission Danoise pour l'Exploration de la Mer;
Charlottenlund Slot, Charlottenlund.

Espagne:
*M. Rafael Garcia Rodriguez;
Contre-Amiral, Directeur de l'Institut Océanographique Espagnol;
Alcala 27, Madrid.

*) Empêché d'assister à la réunion.

Éire:
*M. G. P. Farran;
Chief Inspector of Fisheries;
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*M. A. E. J. Went;
Inspector of Fisheries;
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Finlande:
M. le Dr. T. H. Järvi;
Professeur, Directeur de l'Institut scientifique des Pêches;
Helsingfors.
M. le Professeur Erik Palmén;
Directeur de l'Institut pour l'Exploration de la Mer;
Helsingfors.

France:
*M. Pierre Tissier;
Conseiller d'État, Président du Conseil d'Administration de l'Office Scientifique et Technique des Pêches Maritimes;
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M. Jean le Gall;
Professeur-Agrégé de l'Université, Directeur de l'Office Scientifique et Technique des Pêches Maritimes; *59, Avenue Raymond-Poincaré, Paris.*
M. André Alloy;
Sous-Directeur des Pêches Maritimes à la Marine Marchande, *Paris*, remplaçant
*M. Terrin;
Directeur des Pêches Maritimes à la Marine Marchande, *Paris*. (Suppléant).
*M. Joliot-Curie;
Membre de l'Institut, Professeur au Collège de France, Directeur de la Recherche Nationale Scientifique Appliquée, *Paris*. (Suppléant).

Grande Bretagne:

M. A. T. A. Dobson, C.B., C.V.O., C.B.E.;
Fisheries Secretary, Ministry of Agriculture and Fisheries, St. Stephen's House;
Victoria Embankment, London S.W.
M. J. E. de Watteville;
Fisheries Secretary;
Scottish Home Department, Edinburgh, Scotland.

Islande:

M. Jakob Møller;
Ministre plénipotentiaire de l'Islande à Copenhague;
Ny Vestergade 21, Copenhague.
M. Árni Friðriksson;
The University, Research Institute, Fisheries Department;
Reykjavik.

Norvège:

M. le Professeur, Dr. Johan Hjort;
Hofstad Gaard;
Hön Station per Oslo.
M. G. Rollefsen;
Laboratoire du Directeur des Pêches;
Bergen.

Pays-Bas:

M. le Dr. B. Havinga:
Director of the Fisheries Laboratory, Oost Indisch Huis;
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Pologne:

*M. le Dr. Franciszek Lubecki;
Inspecteur Général des Pêches Maritimes;
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*M. le Dr. Józef Borowik;
Directeur de l'Institut Baltique;
Bydgoszcz, Ossolinskiech 4.

Suède:

M. le Dr. K. A. Andersson;
Bragevägen 4, Djursholm 2, Stockholm.
M. le Dr. Hans Pettersson;
Professeur, Institut d'Océanographie;
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EXPERTS:

Outre les noms des personnes présentes à la réunion sont ajoutés les noms des membres de comité non présents.

Danemark:

Bertelsen, M. E.; Laboratoire marine-biologique, *Charlottenlund Slot.*
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Jensen, M. le Dr. Aage J. C.; Station Biologique Danoise, *Charlottenlund Slot.*
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Nielsen, M. le Dr. Niels, Professeur à l'Université, *Studiestr. 6, Copenhague.*
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Spärck, M. le Professeur R.; Muséum de Zoologie, *Krystalgade, Copenhague.*
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*BELLOC, M. GÉRARD; Directeur du Laboratoire de l'Office des Pêches, *La Rochelle.*

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*FONTAINE, M.; Professeur de Physiologie au Muséum National d'Histoire Naturelle, *Paris.*

*FURNESTIN, M. le Dr. J.; Directeur du Laboratoire de l'Office des Pêches Maritimes, *Marseille.*

*LARRIEU, M.; Conservateur des Eaux et Forêts au Ministère de l'Agriculture, *Paris.*

*PERIER, M. ALAIN; Chef du Bureau de la réglementation de la pêche au Ministère de la Marine Marchande, *Paris.*

*PRENANT, M. MARCEL; Professeur à la Sorbonne, *Paris.*

*ROUCH, M. le Cdt. I.; Professeur à l'Institut Océanographique, Directeur de l'Institut Océanographique de Monaco, *Paris.*

*TEISSIER, M. G.; Professeur de Zoologie à la Sorbonne, *Paris.*

*VIBERT, M. G.; Inspecteur des Eaux et Forêts, Ministère de l'Agriculture, *Paris.*

Grande Bretagne:

CLARK, Mr. R. S., M.A., D.Sc., F.R.S.E.; Scientific Superintendent, Marine Laboratory, *Aberdeen.*

EDGELL, Vice-Admiral Sir J. A., K.B.E., C.B., R.N. (Retd) lately Hydrographer of the Navy, *Admiralty, Whitehall, London, S.W.1.*

GRAHAM, Mr. MICHAEL, M.A., F.L.S.; Fisheries Laboratory, *Lowestoft.*

*LUMBY, Mr. J. R.; Fisheries Laboratory, *Lowestoft.*

*MACKINTOSH, Mr. N. A., D.Sc., A.R.C.S.; Director of Research, "Discovery" Committee, Colonial Office, Queen Anne's Chambers, *Dean Farrar Street, London S.W.1.*

*MENZIES, Mr. W. J. M., F.R.S.E.; Scottish Home Department, *Edinburgh.*

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*TAIT, Mr. JOHN B., D.Sc., Ph.D., F.R.S.E.; Marine Laboratory, *Aberdeen.*

*THOMPSON, Professor Sir D'ARCY W., C.B., F.R.S.; The University, *St. Andrews, Scotland.*

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GUDMUNDSSON, Dr. FINNUR; *Reykjavik.*

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BRAARUD, M. le Dr. TRYGVE; *Blindern.*

DAHL, M. le Professeur KNUT; *Smestad.*

DANNEVIG, M. le Dr. A.; *Flødevigen.*

EGGVIN, M. le Dr. JENS; Laboratoire du Directeur des Pêches; *Bergen.*

GRAN, M. le Professeur H. H.; *Slemdal.*

LEA, M. EINAR; Laboratoire du Directeur des Pêches, *Bergen.*

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Pays Bas:

*TESCH, Mr. le Dr. J. J.; Rijksmuseum van Natuurlijke Historie, *Leiden.*

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Höglund, M. le Dr. Hans; *Lysekil.*
Johnson, M. le Dr. N.; *Bornö, Gåseberg.*
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Nybelin, M. le Dr. Orvar; Intendant du Muséum d'Histoire Naturelle, *Göteborg.*
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Zeilon, M. le Professeur N. O.; l'Université, *Lund.*

SECRÉTAIRE GÉNÉRAL:
Dr. Harald Blegvad.

HYDROGRAPHE:
Dr. J. P. Jacobsen.

1E SECRÉTAIRE:
Mlle E. Brønniche.

HÔTE:
M. Guy de Schoutheete de Tervarent;
Ministre plénipotentiaire et Envoyé extraordinaire de la Belgique, Légation de Belgique, *Kronprinsessegade 36, Copenhague.*

AGENDA

for the thirty-third Council Meeting, Copenhagen, October 15th—20th, 1945.

A. First Meeting of Delegates and Experts to deal with the past; Reports and Statements of Accounts.
President to request the Council's approval of resolutions arrived at in conferences with the Danish Delegates and with Dr. K. A. ANDERSSON:

1. Prolongation of the Budget of 1939.
2. Supplements to the Budget.
3. Payments of amounts granted but not drawn.
4. Delegates to be asked whether contributions not paid may be expected or are to be waived.

B. 1. Meeting of Delegates for the purpose of electing the President and other members of the Bureau.
2. Question of the Convention proposed in London in 1937 and 1943 to be submitted to a meeting of the Consultative Committee.
3. Meeting of the Consultative Committee to deal with matters of scientific interest to the Council and to elicit which Committees are in a position to negotiate and also to recommend to them that they should meet and elect Chairmen.

C. Reports from Committees to be submitted to and considered by the Consultative Committee and the newly elected Bureau, who will prepare Estimates for the financial year 22 July 1945—21 July 1946.

D. Council Meeting to consider proposals submitted and fix the Budget.

E. Question of an invitation to Governments not represented at the Council Meeting to join the Council.

REPORT

of

the thirty-third Meeting of the Council.

First Sitting: Monday, October 15th, 1945, at 10 a. m.

In the presence of Mr. FRANTS HVASS, Director of the Danish Foreign Office, representing the Danish Minister of Foreign Affairs and of Mr. B. DINESEN, Chief of the Fisheries Directorate, representing the Danish Minister of Agriculture and Fisheries as well as the Danish Director of Fisheries, the President, Professor JOHAN HJORT, took the chair.
Present: Members and Experts.

Le Président prend la parole:

Messieurs les Délégués, Messieurs les Experts!

J'ai l'honneur de déclarer ouverte la 33ième assemblée plénière du Conseil International pour l'Exploration de la Mer.

La liste de nos collaborateurs pendant ces dernières années nous rappelle un grand nombre d'amis que nous ne reverrons plus jamais. Avant de passer à l'ordre du jour, je dois m'incliner devant la mémoire de ces collègues.

Peu de temps avant sa mort, le président d'honneur de notre organisation, OTTO PETTERSSON, m'avait envoyé ses meilleurs vœux afin que nous menions à bien la tâche qui nous incombait: sauver le Conseil International à travers les dangers de la guerre.

Sa lettre exprimait la crainte qu'il ressentait pour cette organisation, à laquelle il portait le plus vif intérêt pendant une longue vie. Durant ces années, j'ai souvent pensé à son travail, en collaboration avec d'autres hommes de science suédois, — travail, qui fut la pierre d'assise de l'Exploration internationale de la Mer.

Son but était de voir les rapports entre l'existence des êtres vivants et les différentes conditions de vie, qui se trouvent dans la mer, entre la biologie et la hydrographie.

Que l'activité scientifique ne doive pas être considerée uniquement comme un champ d'activité pour les savants, ni uniquement comme un service social pour les travailleurs de la mer, pêcheurs et chasseurs, nous ont clairement démontré les belles paroles prononcées et l'aide donnée à notre organisation par le vice-président du Conseil, THÉODORE TISSIER. Lui aussi, nous n'aurons malheureusement jamais plus l'occasion de le revoir.

Durant son dernier séjour à Copenhague le président THÉODORE TISSIER s'exprima ainsi:

"Toutes les institutions qui ont pour but de favoriser le développement d'un travail international, et qui, par la suite, contribuent au bien de l'humanité, ont aujourd'hui une importance des plus capitales. Elles sont malheureusement en petit nombre comparativement à celles qui travaillent pour la destruction de cette humanité. Nous envisageons pour le moment l'avenir avec la plus grande inquiétude. Une politique de paix est la seule qui soit digne de l'humanité. C'est la seule politique qui ne soit jamais en défaut, et même si elle se heurte à des difficultés et qu'il soit facile de dire qu'on la trahit à la longue, tout travail, cependant, fait en vue d'obtenir une véritable compréhension entre les peuples et ayant le respect de la vie, est le seul, qui soit capable de porter un fruit durable."

"Actuellement il n'y a que peu d'associations internationales et non politiques, où les représentants des peuples aient l'occasion de se rencontrer dans leur intérêt commun, et d'étudier la possibilité de relèvement des conditions d'existence. Ce sont là les buts de l'océanographie internationale, et c'est

pourquoi ils doivent être soutenus dans toute la mesure du possible. Que revienne le jour où les hommes politiques puissent se rencontrer de nouveau dans la paix et dans l'esprit de conciliation, animés du seul désir d'harmonie et de compréhension."

Ce furent les dernières pensées que nous adressa le président TISSIER.

Nous sommes heureux d'apprendre que dans l'avenir, les fils de nos grands collaborateurs OTTO PETTERSSON et THÉODORE TISSIER: le professeur HANS PETTERSSON et le Conseiller d'État PIERRE TISSIER seront membres de notre organisation.

Durant beaucoup d'années CARL HEINRICI, notre vice-président, a travaillé en collaboration avec le président TISSIER et avec nous. Puis, quand la guerre a interrompu toute relation entre nous, HEINRICI continua ses efforts pour soutenir cette institution de coopération entre les nations qui pourtant étaient en guerre les unes contre les autres. Sans aucune sollicitation de notre part, il procura au budget du Conseil des souscriptions ordinaires et volontaires considérables. C'est avec reconnaissance, et je dois dire avec piété, que je rappelle ici l'aide qu'il a mise à notre disposition et qui n'a jamais failli.

Durant ces années de guerre nous avons eu à subir, non seulement la perte de ces membres éminents du Bureau du Conseil, mais encore celle du secrétaire administratif le capitaine NELLEMOSE. Son travail infatigable, durant de si longues années pour la tâche à laquelle il s'était voué, fut brutalement interrompu. Son patriotisme le mit en conflit avec les forces destructives qui s'emparèrent aussi du Danemark pendant cette guerre. De son travail consciencieux et dévoué pour l'idée internationale nous gardons un souvenir reconnaissant.

Nous déplorons également la perte du délégué norvégien du Conseil, OSCAR SUND, et du délégué polonais MICHEL SIEDLECKI. Ces hommes ont également sacrifié leur vie en travaillant pour l'idée internationale. Dès sa première jeunesse OSCAR SUND fut mon collaborateur. Il naquit non loin des plus grands districts de pêche de la Norvège dans les îles Lofoten et déploya une grande énergie pour améliorer les conditions sociales des pêcheurs. Ce qui a suscité le plus grand intérêt durant ses dernières années, ce fut son emploi de l'appareil de sondage par le son pour la recherche des bancs de poissons migrateurs. Nous déplorons aussi la perte du professeur GILSON, délégué de la Belgique depuis plus de quarante années. La participation de la Belgique au travail international est tellement liée à son grand apport personnel qu'il sera bien difficile de le remplacer.

Les travaux dûs aux nombreux collaborateurs que nous avons perdus, n'ont pas eu une moindre importance. Parmi eux se trouvaient des biologues, tels que ALLEN, DAVIS, EHRENBAUM, FISCHER, STANLEY KEMP, KNIPOWITCH, F. V. MORTENSEN, RAITT et ROULE, qui ont fourni de précieuses études à la tâche actuelle de ce Conseil, à savoir, la règlementation internationale de la pêche maritime à l'avenir.

A côté de ces biologistes nous avons perdu les physiciens BRUNO SCHULZ, THORADE, WATTENBERG et WITTING, explorateurs éminents qui s'étaient voués à l'étude des causes physiques et chimiques, qui sont les conditions de vie des organismes dans la mer, c'est à dire l'étude du "milieu".

Je vous prie de vous recueillir pendant quelques instants et d'évoquer la mémoire de tous ces collègues.

Après une minute de silence le Président poursuit:

Pendant les longues années qui se sont écoulées depuis la dernière Réunion du Conseil en 1939, il a semblé douteux que nous puissions jamais voir la reprise d'un travail international quelconque. Très souvent j'ai dû penser à l'épilogue que HENRIK IBSEN a écrit vers la fin de sa longue production littéraire, épilogue qu'il a appelé: "Les revenants" ou "Quand nous, qui étions morts, nous nous réveillons".

Dans ce drame il appelle morts les hommes qui ont trahi leur idéal le plus cher au profit de leur propre vanité et de leur intérêt matériel.

Quand ce fait est évident aux personnes qui jouent le drame, le problème se pose: La possibilité d'atteindre l'idéal, n'est-elle pas perdue maintenant?

Et dans le drame il s'est montré que ceux qui s'éveillent trop tard à cette compréhension ne sont plus capables de vivre comme ils auraient pu le faire dans leur jeunesse.

Est-ce là le sort de l'Europe? L'idéal qui se dessinait à peine à la Révolution Française et la révolution industrielle du temps de KANT et de LAMARCK et qui semblait de plus en plus s'approcher de la réalité dans la Société des Nations, les idées de THÉODORE TISSIER, ami de BRIAND, tout ceci est-ce perdu maintenant?

Quand le Ministère des Affaires étrangères au Danemark nous a temoigné — à moi et à ses propres délégués — la confiance de bien vouloir s'adresser à tous les pays à sa portée en leur proposant une nouvelle réunion du Conseil, j'éprouvai pour ma part une crainte que les difficultés se montreraient insurmontables. La guerre a créé les obstacles les plus géniaux à la collaboration des nations et nous sommes bien loin d'avoir vu la renaissance des individus.

Comprenant parfaitement bien ces difficultés j'ai néanmoins osé proposer déjà maintenant cette réunion dans le sentiment que le problème central de notre organisation — la règlementation internationale de la pêche maritime — demande de l'activité de notre part le plus tôt possible. Aussi suis-je plus content que je ne saurai le dire, que cet appel à l'intérêt de la cause a eu une si grande adhésion et je prie chacun des membres présents et chacune des nations représentées de recevoir mes remerciements les plus chaleureux parce que, — dans l'intérêt de la cause — ils ont surmonté tous les obstacles que les circonstances ont dressés.

J'espère avoir le droit de considérer la représentation comme étant assez nombreuse pour être appelée une représentation du Conseil International, mais

une de nos tâches sera de nous adresser aux pays que nous désirons voir représentés à l'avenir afin de savoir s'ils désirent adhérer à notre organisation. Peut-être pourrait-on faire une nouvelle convention quinquennale de la future collaboration, pareille aux conventions que nous avions jusqu'au 21 juillet 1941.

Je salue en votre nom plusieures personnes qui siègent parmi nous comme délégués pour la première fois. Je souhaite la bienvenue aux nouveaux délégués: M. le Professeur H. J. Koch (Belgique), M. le Professeur E. Palmén (Finlande), M. le Ministre Jakob Møller (Islande), M. le Dr. Havinga (Pays Bas), M. André Alloy (France) et aux délégués de la France et de la Norvège, MM. Jean le Gall et G. Rollefsen, que nous connaissons déjà depuis des années.

Malheureusement il nous manque des représentants de l'Espagne, de l'Eire et de la Pologne.

Il y a de plus plusieurs experts qui siègent parmi nous aujourd'hui pour la première fois; je m'excuse de ne pas les citer nominalement et leur souhaite à tous la bienvenue au nom du Conseil.

Enfin je vous propose d'adresser selon notre coutume, par télégramme, un hommage d'affectueux respect à sa Majesté le Roi de Danemark, de même qu'un télégramme à notre Président d'honneur, Mr. Maurice.

After these words of memorial and welcome to the audience I am giving a review of the administrative principles followed during the time May 1939 to October 1945:

At its meeting on May the 17th in Berlin the International Council unanimously authorized me "to incur and defray, within the limits of the previous year's budget, the expenses of the financial year until a new budget has received the sanction of the Council" (Rapports Vol. CIX, point 7, page 17).

When the war had started I sent a circular letter, dated October 11th 1939, to Delegates of the countries (except Poland which could not be reached) asking their advice concerning the change in the situation created by the war. In their answers the Delegates all urged me to do my utmost to continue the work of the Council. Shortly after this correspondence, in April 1940, the Central Office was cut off from every connection with most of the previously cooperating countries, but I succeeded at any rate in sending the Administrative Secretary the following telegram: "In case no Council meeting can be held before April 1941 I authorize you as agreed in Berlin last year to pay salaries until April 1941 at the Central Office as well as the honoraria passed at the Council meeting in Berlin last year. The necessary expenditure may be drawn from the cash balance and the investments of the Council presuming those to be sufficient for the expenditure. No contribution from any participating country should be demanded and the question of a new 5-year period is to be postponed until further notice. In case honoraria cannot reach the addressees such should be kept on the Council's account or an account should be opened for the purpose of payment later. Please acknowledge receipt of this telegram and distribute copies to members of Bureau and Delegates."

On April the 18th a circular citing this telegram was sent to Delegates. Replies were however only received from M. Tissier and Dr. Heinrici. However by later visits to Copenhagen and the active support of the Danish Delegates and the Administrative Secretary, Captain Nellemose, a somewhat reduced "Berlin Budget" was carried on until the end of the 5-year period of the International Agreement for the continuation of the activities of the Council. I beg to refer to the financial review which has been sent to Delegates and Experts as far as circumstances did permit.

But when the international agreement came to an end, on July the 21st 1941, it was obvious, that the constitutional right of the President to incur and defray the expenses of the Council was more doubtful. It could hardly be built on any other base than that of necessity and the letters mentioned above from the Delegates who had urged me to continue the work of the Council. On the base of this support I ventured to continue the payment of the expenses of the Council. A great moral support of this standpoint has been the fact that several countries even after the end of the said 5-year period continued to pay their previously obligatory yearly contributions as in all previous years.

From Denmark and Germany even great voluntary contributions have been added in spite of the fact that the Central Office always has maintained the standpoint mentioned in my telegram of April 1940, that "no contributions from any participating country should be demanded." Of special importance has been the fact, that the Danish Government at the instigation of the Danish Delegates from the financial year 1941—42 onwards to the 30th September 1945 has paid a monthly sum corresponding to the honoraria and salaries for all Danish citizens employed in any way in the work of the Council. To these contributions we owe the present situation that the financial status of the Council to-day may be said to be practically unaltered since its last meeting in Berlin 1939. I feel confident that this meeting will authorize me to express the Council's most sincere thanks to the Danish Government for this munificent support. During the past years I have myself at several occasions thanked the German representative Dr. Heinrici, to whom the Council owes the German contributions even at the most critical European situation. It is an interesting biological fact that in countries engaged in the most cruel wars against their neighbours there always exist largeminded individuals who make the greatest sacrifices for saving the still existing possibilities of an international co-operation for the common investigation of what is real and true.

Under these circumstances it has been most valuable for my endeavours to have the assistance in

meetings with Danish and Swedish Delegates and the never failing endeavours of the staff of the Central Office, in the first years chiefly from Captain NELLEMOSE and later by Miss EBBA BRÖNNICHE.

Thanks to the financial support from several countries and the thorough and conscientious administrative help it has been possible not only to continue the Berlin budget as voted in 1939, but also to defray a series of extraordinary payments to officials and staff. From the documents which are in your hands it will be seen that in the years 1943 to 1945 there have been paid cost-of-living bonus, additions to salaries, new honoraria to the editor of the new publication "Annales Biologiques", to Professor KNUDSEN as acting Vice-President, extraordinary revision of a hydrographical Card-index and other minor extraordinary expenses.

As a condition for these extraordinary payments it has all through been understood that they should not be binding for any decisions of the Council with regard to budgets for coming years. From this point of view I maintain that the present Council will be free to prepare and decide a new budget for the financial year 1945—1946 as the Delegates may think possible and advisable under the present conditions. I am aware of the fact, that the Delegates may feel that the time for their study of the documents has been very short but I beg nevertheless to propose, that this meeting should judge and vote, approve or disapprove the decisions made during the past years since the last meeting 1939. In this connection I may mention that it has been our custom to have the budget of a past year approved and in the next year submitted to a final approvement. This means that the question in the meantime may be studied by the Financial Committee and the Delegates in more details and again submitted for trial.

Before the meeting decides this proposal I beg to draw your attention to two special questions which have not been finally decided but nevertheless are contained in the financial proposal of the budget.

During the war it was not possible to pay the honoraria, which according to the Berlin Budget were due to British Editors and Chairmen of Committees, and French and Dutch Chairmen for a shorter period. The amount corresponding to the honoraria for these Officials have however been placed on a special account the "Creditors", pending the final vote of the Council. I beg to express the hope that the honoraria due to the above-mentioned Chairmen of Committees and Editors may now be voted and accepted. Regarding the incidentals voted to the President in previous years I did not wish to touch this amount after the end of the 5-year period admitting the possibility that my own decision in this matter might be considered as doubtful from a legal point of view. Should however the Council now decide to have the amount for these years placed at my disposal I beg to propose that it may remain on the account mentioned until the financial and exchange conditions of the Council may satisfy the payment without interfering with the interest of the Council.

With these remarks and with reference to the documents which have been distributed to the Delegates I beg to have your decision with regard to all these administrative and financial decisions during the years passed since our last meeting 1939.

Mr. DOBSON said:

Mr. President! On behalf of the British Delegation, I wish to thank you for the charming way in which you have welcomed us to this conference and to express our great pleasure at being once again in Copenhagen.

Gentlemen.

The President has given a very clear account of the action which he has taken throughout the bitter war years to keep the activities of this great body alive. He has placed us all under a great obligation. We owe him a very great debt.

In his statement the President has dealt in a very sympathetic manner with our many losses — a long and grievous list of those friends whom we shall not have the pleasure of seeing again, a list headed by such distinguished names as OTTO PETTERSSON and THÉODORE TISSIER. I personally am a comparatively new-comer to the meetings of the Council; — having attended only two meetings previously, at one of which I was an observer only. I have not therefore had the privilege of having known all those whose names have been mentioned. There are two men however that I particularly shall miss. The first is Professor SIEDLECKI; I am no scientist, but I found Prof. SIEDLECKI a most intensely interesting companion, — there seemed to be no subject on which he could not speak with expert knowledge. The second is Captain NELLEMOSE. I feel that his many friends and the Council have suffered an irreparable loss. In Great Britain a real shock was caused by the news that these two men had died in a German concentration camp. We feel the utmost sympathy not only for their relatives, but also for the countries, of which they were citizens.

With regard to that part of the President's speech which dealt with the Council's activities, I wish to express our gratitude for what the President has done for us all. We cannot, I think, adequately realize the extent of the difficulties which faced him. He has endeavoured to communicate with me through different sources and I endeavoured to inform him of my concurrence in his decisions. We have nothing but admiration for the President's efforts to keep the Council in operation and for having made all the arrangements he has. In all these matters he has had to shoulder an immense responsibility, and he has had the invaluable support of the Danish Government. We are very much indebted to the Danish Government, not only for housing us at Charlottenlund but in many other respects. On behalf of His Majesty's Government I should like to express our deep appreciation for their generous assistance in making

it possible for the Council to continue its activities, especially by their additional contributions during the war years. I hope that the representative of the Danish Foreign Office will convey to his Government the purport of my remarks.

I do not wish to detain the meeting, but one more word from me may possibly assist the wish of the President that you should endorse his financial arrangements. In the list of persons in respect of which honoraria have been put into a suspense account, there are four British officials or experts to whom honoraria have not been paid from 1939 onwards. The President asks the Council that these honoraria should be paid not only for the first two years of the war, but also for the other four years. We appreciate very much this gesture, but we see a very great difficulty in paying honoraria for work which it has not in fact been possible to carry out. In respect of the two last years of the 5-year period the British officials of the Council were not in a position to carry out any work, and they, therefore, do not desire to receive any salary. After the 5-year period, the British Government were not, of necessity, members of the Council and therefore no honoraria can be paid to the representatives for the four years 1941/42—1944/45. The Council will thus have a sum of about 67.000 Kr. at their disposal. This does, of course, not apply to the honorarium of the President and I wish on behalf of the British Delegation to move that he should receive this honorarium. (Applause).

The Director of the Ministry of Foreign Affairs, Mr. Hvass, said:

Mr. President,

Ladies and Gentlemen!

The Minister for Foreign Affairs and the Minister for Agriculture and Fisheries would have taken great pleasure in being present at this meeting in order to bid the members of the International Council for the Exploration of the Sea welcome to Denmark. As you may be aware the first general elections to the Danish Parliament, after the liberation of Denmark from the Nazi yoke, are going to be held in the immediate future, and in view of this fact it is, unfortunately, impossible for the two ministers to be present today. Also the Director of Fisheries, Mr. Trolle Thomsen, regrets that his official duties prevent him from being present.

On behalf of the Minister for Foreign Affairs — and I also venture to speak on behalf of the Minister of Agriculture — I ask your permission to express our heartfelt thanks to you Mr. President and Mr. Dobson, for the cordial words you were kind enough to address to the Danish Government. Since the International Council for the Exploration of the Sea was last able to hold a meeting at which it was possible for all the member states to be represented, Europe has passed through a number of gloomy years. Every member of this assembly can bear witness to that, and also we in Denmark have had heavy burdens to bear during the German occupation, a period of violence and oppression. Throughout these years we in this country have, however, continued to feel a keen desire for the resumption, at the earliest possible date, of the collaboration between the peace-loving nations, and it has been a pleasure for the Danish Government and the Danish authorities to do their share towards rendering it possible for the International Council for the Exploration of the Sea, through its bureau and the scientists attached to it, to continue its activities to the extent that circumstances permitted.

We are glad that it has proved possible, in spite of all difficulties, to keep the framework of the Council intact, so that it is ready to resume its full activities, and the Danish Government, who have always considered it a matter of great importance for this body to continue its very essential work, have been very gratified to see that the great majority of the member states have demonstrated their interest in the continuance of this collaboration by appointing delegates to this session of the Council.

I have, then, the honour, on behalf of the Danish Government to bid you, Mr. President, and the other members of this assembly, a cordial welcome to Denmark, and beg permission to express the sincere wish that the deliberations which you are now about to initiate, be attended with every success.

The Director of the Ministry of Foreign Affairs and Mr. Dinesen then left the meeting, and the President continued the meeting in the following words:

With reference to the Agenda, copies of which have been sent to the representatives at this meeting I beg to propose that we agree on the following procedure.

At all previous meetings of the Council it has been the custom, that the President and officials, i. e., Chairmen of Committees who have been acting during the previous year shall continue their functions during the new actual meeting even if new elections may lead to changes for the coming year.

1) As indicated in the Agenda I beg to propose that a meeting of all Delegates present shall take place immediately after this meeting for the election of President and members of the bureau. On the other hand a meeting is to be held at Charlottenlund at 3 o'clock this afternoon under the presidency of the Chairman of the Consultative Committee Dr. E. S. Russell for organization of the committees. It is then understood that the gentlemen who in 1939 were chairmen and vice-chairmen of the then existing committees shall be asked to try to establish a new committee meeting. I appeal to Dr. Russell, Dr. Tåning, Dr. Tesch, Dr. Clark, Dr. Blegvad, Dr. Andersson, Professor H. H. Gran, Professor Knudsen, and Mr. Rollefsen to follow this plan. With regard to the Atlantic, Atlantic Slope, Southern North Sea, Salmon and Whaling Committees new arrangements must be found. It is understood that all committees at their meetings elect their chairmen for the coming

year. That they draw up their plans for investigation, if especially needed accompanied with financial proposals to be sent to the Chairman of the Consultative Committee, who will collect all proposals of this kind within a report to the Bureau.

2) I beg to suggest that the new Bureau among other questions will draw up a plan for the decision of the final Council Meeting concerning the following problems:

a) The question of outstanding contributions.
b) The question of a new five-year convention of participation in the work of the Council.
c) The Convention of London 1937, especially its paragraph 11 proposing a permanent Commission for the control of the rules of the Convention.
d) The question of invitations to countries which are not represented at this meeting to join the Council.
e) The proposals which may be delivered from the Consultative Committee and the preparation of the new budget for the year 1945/46.
f) The question of time and place for a new Council Meeting 1946.

The time for the first meeting of the Bureau to be decided later.

The Meeting adjourned at 11.00 a. m.

Second Sitting: Monday, October 15th, 1945, at 11.15 a. m.

The President Prof. HJORT in the chair.
Present: The Members of the Council.

The President opened the Meeting and called on Mr. DOBSON.

Mr. DOBSON said that the rules of the Council required the President to be elected annually, and the Council being, as he had already said, so greatly indebted to Dr. HJORT for his endeavours to keep the Council going during the war, it would act very wrongly if it did not re-elect him. (Applause.)

The President asked if there was any other proposal. None was put forward.

The President then thanked Mr. DOBSON for the kind words he had pronounced and thanked the Council for their renewed confidence in him. He felt sure that there were years of hard work before the Council and promised to do his very best as President.

The President continued by saying that in respect of the Bureau this should, according to the Statutes, consist of the President and four Vice-Presidents. The President moved the re-election of the two Vice-Presidents still alive, Professor MARTIN KNUDSEN and Mr. A. T. A. DOBSON, and proposed the election of the new French Delegate, Monsieur le Conseiller d'Etat, PIERRE TISSIER, who was, unfortunately, not present at this Meeting of the Council, and of the senior Swedish Delegate, Dr. K. A. ANDERSSON, who had, throughout the war on several occasions, been kind enough to come to Copenhagen and assist him and the Danish Delegates in his endeavours to continue the activities of the Council. (Applause.)

Dr. K. A. ANDERSSON begged to express his most sincere thanks to the Council for electing him as a member of the Bureau and the hope that he would be able to fulfill this task to the satisfaction of the Council.

M. ALLOY spoke as follows:

Monsieur le Président.

Au nom de la délégation française, je vous remercie de l'honneur que vous lui avez fait en désignant M. PIERRE TISSIER, Conseiller d'Etat, Président du Conseil d'administration de l'Office Scientifique et Technique des Pêches Maritimes, pour occuper les fonctions de Vice-Président du Bureau du Conseil International pour l'Exploration de la Mer, en remplacement de son père, M. le Président THÉODORE TISSIER, décédé.

Retenu par des devoirs impérieux de sa charge, M. le Président PIERRE TISSIER n'a pu venir siéger cette année à Copenhague. Mais je puis vous assurer que l'an prochain, il assistera aux travaux du Conseil à la tête de la délégation française.

The President thanked M. ALLOY for these words and asked him to present to M. le Président PIERRE TISSIER the greeting of the Council and the hope of seeing him next year.

The Meeting terminated at 11.30.

Third Sitting: October 19th, 1945, at 3 p. m.

The President, Dr. HJORT, in the Chair.
Present: Members and Experts.

The President opened the Meeting and welcomed the Belgian Minister with the warmest wishes for his country and the hope that the Council would also in the future have the pleasure of Belgium's co-operation.

The President stated that in accordance with the decision of the first sitting of the Council the following telegram had been sent to His Majesty the King of Denmark:

> A Sa Majesté le Roi de Danemark,
> Les membres du Conseil International pour l'Exploration de la Mer réunis de nouveau après de longues années au siège du Conseil à Copenhague demandent la permission de témoigner à Votre Majesté leurs sentiments les plus respectueux de même que leur gratitude pour l'aide admirable que le Danemark a rendu au Conseil pendant la guerre.
>
> JOHAN HJORT, Président.

in reply to which the following telegram had been received from the King:

> Mes remerciements sincères heureux de vous savoir de nouveau unis à Copenhague.
>
> CHRISTIAN R.

A telegram had been sent to the Council's Président d'Honneur, Mr. MAURICE, as follows:

> All here present send their affectionate greetings to their Président d'Honneur.
>
> HJORT, President.

to which the President had received the following reply:

> Thank you my love to you all
>
> HENRY MAURICE.

The following telegram had been received from M. PIERRE TISSIER:

> Le Conseiller d'Etat PIERRE TISSIER, Président du Conseil d'Administration de l'Office Scientifique et Technique des Pêches Maritimes, remercie très sincèrement le Conseil International pour l'Exploration de la Mer du grand honneur qu'il lui fait en l'appelant à siéger au Bureau du Conseil en remplacement du Président THEODORE TISSIER disparu.
> Profondément touché de cette marque de sympathie à la mémoire de son père, il assure le Conseil de son entier dévouement.
>
> PIERRE TISSIER.

to which the reply was sent:

> Conseil International pour l'Exploration de la Mer ayant confirmé en réunion plénière votre nomination Vice-Président du Conseil, suis heureux vous adresser sincères félicitations avec espoir vous voir prochaine réunion du Conseil à Stockholm.
>
> JOHAN HJORT.

The President informed the members of the Council that Professor Sir D'ARCY W. THOMPSON had presented the Council with a picture of the old Copenhagen Fishmarket to be hung in one of the rooms at Charlottenlund.

A telegram would then be sent to Sir D'ARCY as follows:

> All assembled here send their warmest thanks for the picture you have presented to the Council and for the kind thought that prompted your gift.
>
> HJORT, President.

Reports and Recommendations of the Committees.

The President referred to the Recommendations of the Committees which had just been circulated and said that the Bureau had accepted these. He briefly summarized the recommendations involving either expenditure or any special action:

1) The recommendation of the Hydrographical Committee "that the Council should endorse the study of the bed of the sea by the new methods developed in Sweden".

2) Furthermore, special attention was drawn to the recommendations 2 and 3 of the Consultative Committee, both carrying the nominations of Sub-Committees, one for consideration of the Hydrographical Card Index arranged by Captain NELLEMOSE (Members: Dr. TÅNING, Professor KNUDSEN, failing him Dr. J. P. JACOBSEN, and Dr. BLEGVAD) and another for Hydrographical-Biological Investigations (Members: Dr. BLEGVAD — Chairman, Dr. JACOBSEN — Secretary, Dr. EGGVIN, Prof. ZEILON, Mr. F. S. RUSSELL, and Dr. BRAARUD).

3) The President further stated that the recommendations of the Committees carried with them the nomination of the following new Chairmen: North-Eastern Area Committee:— Mr. G. ROLLEFSEN; Atlantic Slope Committee: Professor J. LE GALL; Southern North Sea Committee: Mr. WIMPENNY; and Salmon and Trout Committee: Professor KNUT DAHL. For the time being there would be no Combined North Sea and Eastern Channel Committee. Recommendations involving expenditures are mentioned under Estimates.

Estimates for the Financial Year 1945—46.

The President first drew attention to a proposal by the Bureau in respect of payment of Contributions. This proposal was laid on the table and reads as follows:

"A decision is required with regard to the policy to be adopted in connexion with the adherence of the various countries for a new five-year period and the payment of their subscriptions.

The last official five-year period ended with the year 1940—41. In the succeeding four years the Scandinavian countries (Denmark, Norway and Sweden) have paid their contributions either in full or with additional subscriptions. Great Britain has taken the strictly legal position that as they were cut off from communication with headquarters, they were not members for those four years.

It is now proposed, therefore, that all delegates should be asked to arrange for their Governments to notify the Danish Government forthwith that they are willing to adhere for a further five-year period beginning with 21st July 1945.

The effect of this will be as follows:

Great Britain will pay the ordinary contributions for the years 1939—40, 1940—41 and then Kr. 20,000 annually for the five-year period beginning with 1945—46.

France will pay a contribution of Kr. 20,000 for the period beginning with 1945—46.

Finland: The two contributions already paid for the years 1941—42 and 1942—43 will be regarded as covering the years 1945—46 and 1946—47.

Iceland will be asked to pay the outstanding contribution for the year 1940—41 and then Kr. 10,000 for the period beginning with the year 1945—46.

Eire will be asked to pay the outstanding contribution for the year 1940—41 and then Kr. 10,000 for the period beginning with the year 1945—46.

Holland: The two contributions already paid for the years 1941—42 and 1942—43 will be regarded as covering the years 1945—46 and 1946—47.

Belgium will be asked to pay the rest of the outstanding contribution, Kr. 9,347.20 for the year 1940—41 and then Kr. 10,000 throughout the period beginning with the year 1945—46."

Magister Friðriksson, on behalf of his Government, informed the Members of the Council that Iceland would pay her full contribution for all the years, thus placing herself on the same footing as the other Scandinavian countries. (Applause).

The President then referred to the Estimates, summarizing the position as follows:

"The Bureau has examined the finances of the Council exhaustively, and has come to the conclusion that on the present anticipated income the Council will have available for the years 1945—46 and 1946—47 the sum of 387,000 Kroner, which will allow of the expenditure of 193,500 Kroner for each year.

The estimated expenditure for 1945—46 will be about 161,000 Kroner, so that we shall be well within our budget. But the expenditure this year was less in the first three months than it will be in the last nine months. Had this not been the case, the expenditure for the full year 1945—46 would have been about 180,000 Kroner. Next year the expenditure will be heavier but should still be within the 193,500 Kroner estimated to be available, unless unforeseen or extraordinary expenditure has to be incurred."

Before taking the items of the Estimates of Expenditure point by point the President informed the Council that the Bureau had considered it necessary to have a scientist in charge of the Central Office and had asked Dr. Blegvad to take over the post of the late Administrative Secretary, which he had accepted. Dr. Blegvad would then relinquish the Chairmanship of the Transition Area Committee to Dr. E. M. Poulsen. The Bureau had considered it best again to use the title of General Secretary as had been the case in the past when Captain Drechsel had charge of the Central Office. Captain Drechsel had, however, been a Member of the Bureau, then consisting of the President, three Vice-Presidents and the General Secretary. This had been altered in 1927 to President and four Vice-Presidents, and an amendment would be necessary in Articles 14 and 15 of the Statutes of the Council, which at present read as follows:

"The Bureau with the assistance of an Administrative Secretary is responsible for the execution of resolutions of the Council and for all duties incidental to the Council's affairs. The Bureau regulates its own order of business."

"The Bureau on its own responsibility appoints the Administrative Secretary and the rest of the permanent staff of the Office at Copenhagen, but the approval of the Council is required for the salaries attached to these appointments."

The amendment called for the substitution of the word "General" for the word "Administrative". This, as well as the appointment of Dr. Blegvad as General Secretary, was adopted with acclamation.

Dr. Blegvad briefly thanked the Council for the nomination and said that he would do his best to further the international co-operation.

The President then referred to the Estimates of Expenditures, which had been set out in three columns, the order of the items being slightly different from the previous form. In the first column were the figures for expenses up to October 21st 1945 already adopted at the first sitting of the Council, when the President was given *décharge* for the expenses hitherto incurred. In the second column was set out the new budget which the Bureau proposed to submit to the Council, and in the third column the sum of both. The honoraria for the Chairman of the Consultative Committee and the Chairmen of Area Committees it was proposed should remain as previously, at 3,000 Kroner. To the Chairman of the Plankton Committee

and the Salmon and Trout Committee 1,000 Kroner was also proposed as previously, and to Magister FRIÐRIKSSON a sum of 2,000 Kroner as Secretary to the Faxa Bay Sub-Committee. In respect of salaries to the Staff the President on behalf of the Bureau proposed that the following amounts should be voted as annual payments, viz., Kr. 9,000 to the General Secretary and the 1st Assistent Secretary; Kr. 3,000 for biological Assistance; Kr. 6,000 to the Hydrographer; Kr. 6,900 each to the 2nd Assistant Secretary, the Statistical and the Hydrographical Secretaries; Kr. 4,800 to one Clerical Assistant; and Kr. 4,500 to the second Clerical Assistant; Kr. 3,600 being reserved for each of two new Clerical Assistants, one in the Service Hydrographique and the other assisting with publications and the Library.

In respect of Office Expenses the President drew attention to the fact that this had been raised to 20,000 Kroner due to the fact that a very heavy war insurance had already been paid in this financial year in respect of the calendar year 1944 and that there would be a considerable sum to pay in respect of 1945 also. Furthermore the President had, as Delegates were aware, considered it desirable that this first Meeting of the Council after so many years should be celebrated by the luncheon and supper offered on the first Meeting day. Travelling Expenses and Printing Expenses had been fixed in the light of the recommendations of the various Committees. Travelling Expenses also covered expenses incidental to Recommendations of the Transition Area Committee, the Northern North Sea Committee and the Faxa Bay Sub-Committee, 15,000 Kroner. Printing Expenses, see Recommendation of the Consultative Committee in respect of the Salmon and Trout Committee (II, 1, h), Report by Professor JÄRVI; provision was also made for the current publications, Procès-Verbal of the Meeting, Bulletins, Annales Biologiques, and two numbers of the Journal, 25,000 Kroner. — The Extraordinary Expenditure in the first column of the Estimates correponded to those of the Statement of Accounts for 1944—45 and all related to extraordinary additional salaries. Finally, the President asked for the consent of the Council to pay to the widows of Professor G. GILSON and Mr. SUND half a year's honorarium, as had been done in respect of Mrs. NELLEMOSE. This was agreed, and the Estimates of Expenditures were adopted as given on page 22.

Five-Year Periods.

This budget having been adopted Mr. DOBSON said that he took it for granted that it was the wish of everybody that we should enter upon a new five-year period, and asked the Delegates to make it quite clear in their respective countries that they should commit themselves for a new period of adherence of five years.

The President proposed that in co-operation with the General Secretary he should ask the Danish Foreign Office to invite the Governments to agree to the new five-year period. This was adopted.

Nomination of Finance Committee, Editors, etc.

The following were nominated members of the Finance Committee: The President, *ex officio*, Professor KNUDSEN and Dr. BLEGVAD as permanent members, and the senior Delegates of Finland, Holland and Iceland.

Professor KNUDSEN was re-elected Hydrographical Consultant.

Dr. ROSÉN was elected Editor for Statistics.

Mr. LUMBY was re-elected Editor of the Journal.

The Chairmen of the Hydrographical and Plankton Committees were re-elected and Professor DAHL elected Chairman of the Salmon and Trout Committee as proposed by the respective Committees.

Invitation to new Countries to join the Council.

Dr. K. A. ANDERSSON moved on behalf of the Bureau that Canada, Newfoundland, U.S.A. and U.S.S.R. should be invited through the usual diplomatic channels to join the Council.

The President asked if all agreed that the President should be requested, with the assistance of the General Secretary, to write to the Danish Foreign Office asking them to invite the said countries to participate in the work of the Council. This was unanimously agreed.

The Overfishing Problem.

Mr. DOBSON referred to the fact that the question of overfishing had been the concern of all now for many years, and the question had been thoroughly treated in Berlin in 1939. In England a small Committee had been set up with Dr. RUSSELL as Chairman. The Committee had considered what steps could be taken for preventing overfishing as after the last war, when all fishing vessels began to fish in the North Sea with the result that fishing soon became uneconomical.

For two years this Committee had tried to find a proper course to be adopted. Of course it would be very difficult. The report of the Committee had never been published, but Dr. RUSSELL would give an account of what the Committee had done. Mr. DOBSON said that he was now authorized to inform the Council to-day that His Britannic Majesty's Government realized that the only way of tackling this question was to invite the countries bordering the North Sea to meet and to draw up agreed regulations. It had been Mr. DOBSON's hope that a conference could have been called this autumn, but inevitable delays had arisen owing to the change of Government. He was, however, now in a position to tell the Council that the Minister of Agriculture and Fisheries had on 18th October been asked in Parliament by the member for Grimsby whether he proposed to take any step to deal with overfishing. Mr. DOBSON then read the following question and answer which he had received from his office.

"Major YOUNGER asked the Minister of Agriculture whether he proposes to take any steps to promote the regulation of fishing in the North Sea so as to obviate a recurrence of the overfishing that occurred after the 1914—18 war with such disastrous results. The Minister replied: Yes, Sir, H. M. Government have decided to convene as soon as possible an International Conference of the countries concerned for the purpose of drawing up an agreement on the subject. My honourable and gallant friend will realize of course that to be effective any agreement of this kind must be international in character."

Mr. DOBSON said he was now able to ask the British Foreign Office to convene a conference. As to the date, he could say nothing definite, but presumed that it could be in January 1946. Mr. DOBSON pointed out that it would be made clear in the invitation that this was a scientific problem.

Dr. RUSSELL was asked to give a short account of the work of the Committee.

Dr. RUSSELL said that Mr. DOBSON had covered the question so fully that there was very little for him to add. The said Committee consisted of Dr. CLARK, the late Dr. STANLEY KEMP, Dr. RITCHIE and himself. They had treated the question of overfishing between the two wars and had come to the conclusion that overfishing had taken place to such an extent that the fishing had decreased. The question had been discussed at the Council Meeting in Berlin where all agreed to this point of view. The Committee had considered what remedies might be taken against the overfishing and had come to the conclusion that a certain reduction in the fishing fleet would be necessary. The Committee had further come to the conclusion that there was an overfishing in all regions: west of Ireland, north of Iceland, in the Barents Sea, etc. He would be glad to answer any question that might be asked.

The President asked whether the Committee made any proposals going further than those of the 1937 Convention.

Dr. RUSSELL answered that they had suggested a reduction of tonnage of fishing vessels — herring and pelagic fishery excluded.

No other member having any question to ask the President proposed and the Council adopted with acclamation the following resolution:

> That the International Council having learnt with satisfaction the intention of His Britannic Majesty's Government with regard to the calling of an International Conference at an early date for the purpose of drawing up an agreement for regulating fishing in the North Sea, to prevent overfishing, would welcome an invitation from the British Government to send one or more representatives to the proposed Conference.

Time and Place of the next Council Meeting.

The President reminded the Council that we had had the kind invitation of Sweden to hold the Council Meeting there in 1940 and added that Sweden had now renewed their invitation.

Dr. ANDERSSON said that he had been instructed by his Government to invite the Council to meet in Sweden — he could not yet say where, but it would probably be in Stockholm in August or September next year. (Applause).

The President thanked the Swedish Government on behalf of all members of the Council for the kind invitation and proposed that the next Council Meeting should be held in Sweden. The proposal was adopted with acclamation.

Conclusion of the Meeting.

The President proposed a vote of thanks to the Danish Government for their hospitality at Christiansborg and the luncheons served during the Meetings, and a vote of thanks to the Staff of the Council.

Mr. DOBSON moved on behalf of all the members their cordial thanks to the President for having presided in such a cordial and charming way,

The Meeting terminated at 4.30 p. m.

Regulations Concerning Administration.

Finances.

1. The Danish Delegates are charged with the safekeeping of the Council's Funds, particularly with a view to securing that both the invested and the liquid funds are lodged in a bank as to whose stability there is no reason for apprehension.

   Any document purporting to be signed on behalf of the Council with reference to the Council's invested funds will be accepted by the Bureau as valid if it is signed by the General Secretary and the first Assistant Secretary.
2. The General Secretary is charged with the responsibility for all payments in accordance with the Budget and is authorized to sign cheques on behalf of the Council (or to authorize one of the functionaries of the office to do so) and to meet all unforeseen expenses on his own authority. In any case, however, in which he is in doubt as to the propriety of incurring some unforeseen expenditure he should consult the President beforehand.
3. Receipts for the Contributions of the various Governments shall be signed by the President and the General Secretary. For other receipts the signature of the General Secretary shall be sufficient.
4. Travelling expenses are to be paid by the Council only on the authority of the Bureau or the President and in accordance with the rate of payment prescribed by the Bureau.
5. The Auditors shall check the invested as well as liquid funds on the 21st of July of each year for the purpose of preparing the Balance Sheet and they shall once annually, at such time as they may chose, inspect the Council's funds.

   The Auditors shall be entitled to consult the Danish Delegates on any question in connection with the accounts.

   All bonds and other documents appertaining to the invested funds of the Council shall be lodged in a bank.
6. No post in the service of the Council confers any right of Pension on the occupant; the Council may, however, on the recommendation of the Bureau, pay pensions to such persons, for such periods and of such amounts as may be decided.

General Secretary.

1. The General Secretary is in charge of the Central Office and is generally responsible under the Bureau, from which he takes his instructions, for the administrative business of the Council.
2. He conducts the biological and the routine work of the office, the staff of which, whether clerical, scientific or technical, is subject to his discipline in all matters affecting the conduct of the office.
3. He conducts all the ordinary correspondence, consulting the President as occasion arises. He compiles from time to time a Statement of the most essential letters, which he circulates to the Members of the Bureau.
4. He is responsible for all business connected with the publication of reports, bulletins, etc. in co-operation and consultation with the Chairman of the Editorial Committee, the Editor of the Journal du Conseil, the Hydrographic Consultant and the Editor of Statistics, and he shall prepare all matters for publication in close co-operation with such Principal Assistants.

Estimates

of

the International Council for the Exploration of the Sea for the Financial Year 1945—46.

EXPENDITURE:—

	$^{22}/_{7}$-$^{21}/_{10}$ 1945 Ordinary	Extra-ordinary	$^{22}/_{10}$ 1945–$^{21}/_{7}$ 1946	Total
	D. Kr.	D. Kr.	D. Kr.	D. Kr.
I. Incidentals.				
1. President	1,500.00	—	4,500.00	6,000.00
2. Editor of the Journal	0.00	—	2,000.00	2,000.00
3. Editor of Statistics	0.00	—	1,500.00	1,500.00
4. Chairman of Consultative Committee	0.00	—	2,250.00	2,250.00
5. Chairmen of Committees	3,250.00	—	17,250.00	20,500.00
6. Secretary to the Faxe Bay Committee	0.00	—	2,000.00	2,000.00
II. Headquarter Staff.				
1. General Secretary	0.00	—	6,750.00	6,750.00
2. Biological Assistant	0.00	—	2,250.00	2,250.00
3. 1st Assistant Secretary	1,500.00	750.00	6,750.00	9,000.00
4. 2nd — —	1,250.00	125.00	5,175.00	6,550.00
5. Statistical —	1,200.00	175.00	5,175.00	6,550.00
6. Clerical Assistant	675.00	225.00	3,600.00	4,500.00
7. — —	525.00	300.00	3,375.00	4,200.00
8. — —	0.00	—	2,700.00	2,700.00
III. Hydrographical Staff.				
1. Hydrographical Consultant	750.00	—	2,250.00	3,000.00
2. Hydrographer	750.00	—	4,500.00	5,250.00
3. Hydrogr. Secretary	750.00	900.00	5,175.00	6,825.00
4. — Assistant	0.00	—	2,700.00	2,700.00
IV. Office Expenses	10,503.00	—	ca. 9,500.00	20,000.00
V. Travelling Expenses	919.00	—	ca. 14,000.00	15,000.00
VI. Printing and Distribution	50.00	—	ca. 25,000.00	25,000.00
VII. Pension Fund	0.00	—	3,500.00	3,500.00
VIII. Extraordinary Expenses.				
Professor Knudsen as acting Vice-President	750.00	—	0.00	750.00
Headquarter Staff see under II and III				
Madame Gilson	0.00	—	1,000.00	1,000.00
Madame Sund	0.00	—	1,500.00	1,500.00
Total Expenditure				161,275.00
Estimated Excess of Income over Expenditure				133,114.22
				294,389.22

RECEIPTS:—

	D. Kr.	D. Kr.	D. Kr.
I. Contributions:			
1. Outstanding:			
1939/40	20,000.00		
1940/41	49,347.20		
		69,347.20	
2. Voluntary Contribution from Iceland from $^{22}/_{7}$ 1941—$^{21}/_{7}$ 1945		40,000.00	
3. Extraordinary Contribution from Denmark for August and September 1945		7,000.00	
4. From 1945—1946:			
France	20,000.00		
Great Britain	20,000.00		
Spain			
Belgium	10,000.00		
Denmark	10,000.00		
Éire	10,000.00		
Holland	0.00		
Iceland	10,000.00		
Norway	10,000.00		
Poland			
Sweden	10,000.00		
Finland	0.00		
		100,000.00	216,347.20
II. Interests on Bank Deposits	ca. 200.00		
— - Investments	ca. 4,800.00		
			5,000.00
III. Sale of Publications			ca. 1,000.00
IV. Extraordinary Income: Transfer from Special Account of honoraria not to be paid (interests included)			72,042.02
Total Receipts			294,389.22

Estimate for Pension Fund Account.

	D. Kr.		D. Kr.
Balance as per 22/VII 1945	92,786.44	Balance as per 21/VII 1946 (estimated)	100,326.44
Transferred from revenue	3,500.00		
Interests (Estimated)	4,040.00		
	100,326.44		100,326.44

Approximate Estimates

of

Publications to be printed during the financial year 1945—46.

Series	Volume	Subject	Cost
Rapp. et Proc.-Verbaux	116	Proc.-Verbaux (Oct. 1945)	Kr. 3,000
—	117	Prof. JÄRVI's Report	- 3,500
Bulletins		Bulletin Statistique	- 1,800
—		— Hydrographique	- 2,700
Annales Biologiques		Vol. II	- 3,000
Plankton Sheets		Nos. 1—9	- 1,500
Journal du Conseil		XV, 1—2	- 7,000
			Kr. 22,500
Translations etc.			- 500
Distribution			- 2,000
			Kr. 25,000

List of Members of Committees.

(One member, only, from each country is entitled to vote.)

Consultative Committee
and
Editorial Committee.

Dr. E. S. RUSSELL, Chairman,
Prof. JEAN LE GALL,
Mr. G. ROLLEFSEN,
Dr. Å. V. TÅNING,
Dr. R. S. CLARK,
Mr. R. S. WIMPENNY,
Dr. E. M. POULSEN,
Dr. K. A. ANDERSSON,
Prof. MARTIN KNUDSEN,
Prof. H. H. GRAN,
Mr. G. P. FARRAN,
Prof. Sir D'ARCY W. THOMPSON,
Prof. KNUT DAHL,
Dr. N. A. MACKINTOSH.

North Eastern Area Committee.

Denmark:	Dr. Å. V. TÅNING,
Éire:	Mr. G. P. FARRAN,
England:	Mr. M. GRAHAM,
Finland:	Prof. E. PALMÉN,
France:	Prof. P. DRACH,
failing him	Prof. MARCEL PRENANT,
Iceland:	Mr. Á. FRIÐRIKSSON,
Norway:	**Mr. G. ROLLEFSEN, Chairman,**
Scotland:	Dr. R. S. CLARK,
failing him	Dr. H. WOOD,
Sweden:	Dr. A. R. MOLANDER.

North Western Area Committee.

Denmark:	**Dr. Å. VEDEL TÅNING, Chairman,**
Éire:	Mr. G. P. FARRAN,
England:	Mr. M. GRAHAM,
France:	Prof. P. DRACH,
failing him	Prof. M. PRENANT,
Holland:	Dr. J. J. TESCH,
failing him	Dr. B. HAVINGA,
Iceland:	Mr. Á. FRIÐRIKSSON,
Norway:	Mr. F. DEVOLD,
Scotland:	Dr. R. S. CLARK,
Sweden:	Dr. K. A. ANDERSSON.

Atlantic Slope Committee.

Denmark:	Dr. Å. V. TÅNING,
Éire:	Mr. G. P. FARRAN,
England:	Mr. F. S. RUSSELL,
France:	**Prof. JEAN LE GALL, Chairman,**
failing him	Mr. P. DESBROSSES, or
	Mr. BUDKER, or
	Dr. J. FURNESTIN, or
	Prof. M. PRENANT, or
	Prof. G. TEISSIER.
Spain:	

Northern North Sea Committee.

Denmark:	Dr. Å. V. TÅNING,
failing him	Dr. AA. J. C. JENSEN,
Éire:	Mr. G. P. FARRAN,
England:	Mr. R. S. WIMPENNY,
France:	Mr. P. DESBROSSES,
Holland:	Mr. P. M. VAN RIEL,
Norway:	Mr. E. LEA,
Poland:	Dr. F. LUBECKI,
Scotland:	**Dr. R. S. CLARK, Chairman,**
Sweden:	Dr. A. R. MOLANDER.

Southern North Sea Committee.

Belgium:	
Denmark:	Dr. Å. V. TÅNING,
failing him	Dr. AA. J. C. JENSEN,
England:	**Mr. R. S. WIMPENNY, Chairman,**
failing him	Mr. M. GRAHAM,
France:	Mr. P. DESBROSSES,
Holland:	Dr. J. J. TESCH,
failing him	Dr. B. HAVINGA,

Norway:	Dr. JENS EGGVIN,
failing him	Mr. G. ROLLEFSEN,
Poland:	Dr. M. BOGUCKI,
Scotland:	Dr. H. WOOD,
Sweden:	Dr. A. R. MOLANDER.

Transition Area Committee.

Denmark:	**Dr. E. M. POULSEN, Chairman,**
failing him	Dr. AA. J. C. JENSEN,
Norway:	Mr. PAUL BJERKAN,
	Dr. ALF DANNEVIG,
	Prof. JOHAN T. RUUD,
Poland:	Dr. M. BOGUCKI,
	Dr. F. A. LUBECKI,
Sweden:	Dr. K. A. ANDERSSON,
	Dr. A. R. MOLANDER,
	Prof. HANS PETTERSSON.

Baltic Area Committee.

Denmark:	Dr. AA. J. C. JENSEN,
failing him	Dr. E. M. POULSEN,
Finland:	Prof. T. H. JÄRVI,
failing him	Prof. E. PALMÉN,
Poland:	Dr. M. BOGUCKI,
	Dr. F. A. LUBECKI,
Sweden:	**Dr. K. A. ANDERSSON, Chairman,**
	Dr. A. R. MOLANDER, or
	Dr. CHR. HESSLE.

Hydrographical Committee.

Belgium:	
Denmark:	**Prof. MARTIN KNUDSEN, Chairman,**
Éire:	Mr. G. P. FARRAN,
England:	Mr. J. R. LUMBY,
Finland:	Prof. E. PALMÉN,
France:	Prof. J. ROUCH,
	Mr. LEGENDRE, or
	Mr. FRANCIS BOEUF,
Holland:	Mr. P. M. VAN RIEL,
Iceland:	Dr. H. EINARSSON,
Norway:	Dr. JENS EGGVIN,
Poland:	Dr. M. BOGUCKI,
Scotland:	Prof. Sir D'ARCY W. THOMPSON, or
	Dr. JOHN B. TAIT,
Spain:	
Sweden:	Prof. N. O. ZEILON, or
	Prof. HANS PETTERSSON.

Plankton Committee.

Belgium:	
Denmark:	Prof. OVE PAULSEN,
	Dr. P. JESPERSEN,
	Prof. E. STEEMANN NIELSEN,
	Mr. J. GRØNTVED,
Éire:	**Mr. G. P. FARRAN, Hon. Vice-Chairman,**
England:	Mr. F. S. RUSSELL,
	Mr. M. GRAHAM,
Finland:	Prof. T. H. JÄRVI,
France:	Dr. L. FAGE,
	Mr. F. BERNARD,
Holland:	Dr. B. HAVINGA,
Iceland:	Dr. H. EINARSSON,
	Dr. F. GUDMUNDSSON,
Norway:	**Prof. H. H. GRAN, Chairman,**
	Dr. JOHAN T. RUUD,
	Dr. T. BRAARUD,
Poland:	Dr. M. BOGUCKI,
Scotland:	Dr. R. S. CLARK,
Spain:	
Sweden:	Dr. HANS HÖGLUND.

Statistical Committee.

Belgium:	
Denmark:	Mr. AA. J. C. JENSEN,
Éire:	Mr. G. P. FARRAN,
England:	Dr. E. S. RUSSELL,
Finland:	Prof. T. H. JÄRVI,
France:	Mr. A. ALLOY,
Holland:	Dr. J. J. TESCH,
Iceland:	Mr. Á. FRIÐRIKSSON,
Norway:	Prof. JOHAN T. RUUD,
Poland:	Dr. F. LUBECKI,
Scotland:	**Prof. Sir D'ARCY W. THOMPSON, Chairman,**
failing him	Dr. R. S. CLARK,
Spain:	
Sweden:	Dr. NIELS ROSÉN.

Salmon and Trout Committee.

Denmark:	Dr. E. M. POULSEN,
failing him	Mr. C. V. OTTERSTRØM,
Éire:	Mr. A. E. J. WENT,
England:	Mr. T. E. PRYCE-TANNATT,
Finland:	Prof. T. H. JÄRVI,
France:	Mr. LARRIEU,
failing him	Mr. G. VIBERT,
Holland:	Dr. J. J. TESCH,
Iceland:	Mr. Á. FRIÐRIKSSON,
Norway:	**Prof. K. DAHL, Chairman,**
Poland:	Dr. F. E. LUBECKI,
Scotland:	Mr. W. J. M. MENZIES,
Spain:	
Sweden:	Dr. NIELS ROSÉN,
failing him	Dr. K. A. ANDERSSON.

Whaling Committee.

Dr. N. A. MACKINTOSH, Chairman,
Mr. BUDKER, or
Prof. J. LE GALL,
Prof. Sir D'ARCY W. THOMPSON,
Dr. Å. V. TÅNING,
Dr. J. T. RUUD.

Finance Committee.

Prof. JOHAN HJORT, Chairman,
Prof. MARTIN KNUDSEN,
Dr. H. BLEGVAD,
Prof. T. H. JÄRVI,
The Senior Dutch Delegate,
Mr. JAKOB MØLLER.

Report and Recommendations of the Consultative Committee.

Chairman: Dr. E. S. Russell.

The Committee met on October 15th, 1945, at 3.30 p. m. and on October 18th at 10.00 a.m.

I. Proceedings.

1) The Chairman welcomed the members present and deplored the loss of those deceased.

2) The Chairman emphasized the importance of restarting the work and of drawing up fresh programmes with due regard to present conditions and facilities.

3) Some additions were made to the programme distributed at the Council Meeting; members were designated to take charge of each of the four Committees which were at present without Chairmen.

4) The Chairman gave a broad outline of future work that might be taken up by the Committee.

5) The Chairman called attention to the London Conventions of 1937 and 1943 and said that the British Government had studied the question of further action which had been considered necessary, but the official attitude of the Government could not yet be made public.

6) The reports and recommendations of the several Committees were considered (see Recommendations 1—5).

7) A short discussion took place as to the continued publication of the *Journal du Conseil;* Recommendation 6 was passed.

8) The first issue of the *Annales Biologiques*, prepared by Dr. Blegvad, was discussed, and Dr. Blegvad was complimented on its production.

Dr. Blegvad commented upon the somewhat heterogeneous aspect of the issue, due to the difficulties, caused by the war, in getting in touch with the authors. Some of the contributions, he said, ought rightly to have been published in the *Journal du Conseil* which, however, had not appeared during the war.

It was agreed that efforts should be made to secure a greater standardisation of figures and tables in the next issue. The importance of a quick dissemination of results was stressed. The Committee finally agreed that the publication should be continued.

9) Dr. E. S. Russell was re-elected Chairman.

II. Recommendations.

1. Reports of Committees.

The reports of Committees were presented and the following recommendations were passed, in addition to recommendations on special meetings which are reported in a later section.

a) North-Eastern Area: emphasizing the importance of studying large samples of herring and cod in Norwegian waters.

b) North-Western Area: expenses and honorarium for the Secretary of the Sub-Committee on Faxa Bay.

c) Atlantic Slope: meeting on methods of studying the sardine should be held in some future year.

d) Transition Area: the Governments concerned should consider the protection of *Pandalus borealis*, *Nephrops norvegicus* and *Homarus vulgaris*.

e) Hydrography: that the Council endorse the study of the bed of the sea by the new methods developed in Sweden.

f) Plankton: that publication of the Plankton Sheets for determination of Zooplankton be continued at once.

g) Whaling: the Whaling Committee be reconstituted and meet at the next meeting of the Council.

h) Salmon and Trout: that Professor Järvi's report be published in whole or in part.

2. Index-Cards.

Recommendation 4 of the Hydrographic Committee regarding the future of the card-index was referred to a Sub-Committee consisting of Dr. Tåning, Prof. Knudsen (failing him Dr. J. P. Jacobsen), Dr. Blegvad to consider separately the cards for hydrography and biology.

3. Hydrographical-Biological Investigations.

Recommendation 6 of the Hydrographical Committee and Recommendation 2 of the Plankton Committee were adopted: that a Sub-Committee for discussion of the organisation of combined hydrographical-

biological investigations be formed. In addition the Committee recommended Dr. BLEGVAD as Chairman and Dr. JACOBSEN as Secretary. The Committee would consist of Dr. BLEGVAD (Chairman), Dr. JACOBSEN (Secretary), Dr. EGGVIN, Prof. ZEILON, Mr. F. S. RUSSELL, and Dr. BRAARUD.

4. Meetings of Experts.

a) Recommendation 2 of the Transition Area Committee that herring experts interested in the area should meet from October 20th to 22nd, 1945, was adopted.

b) On recommendation 2 of the Northern North Sea Committee a meeting of herring experts interested in the North Sea should meet at Aberdeen in the spring with representation from Denmark, England, France, Norway and Scotland. Representation from other countries at their own expense would be welcome. Dr. CLARK agreed to act as Convener.

c) Recommendations 1 and 2 of the North-Western Area Committee were passed: that the three editorial members of the Faxa Bay Sub-Committee should meet in England early in the winter; and the Sub-Committee should meet one or two days in advance of the next Council Meeting.

5. Special Scientific Meeting.

Recommendations from several committees that a special meeting be held on Herring Problems at the next meeting of the Council were passed. It was expected that the meeting would last two days and Dr. ANDERSSON agreed to act as Convener.

6. Journal du Conseil.

The Consultative Committee unanimously recommended that the *Journal du Conseil* should be restarted as soon as possible.

Reports and Programmes of Area Committees.

North-Eastern Area Committee.

Mr. G. Rollefsen in the Chair.
The Committee met on October 16th, 1945, at 10.00 a.m.

I. Proceedings.

1) The acting Chairman paid a tribute to the memory of the late Chairman, Mr. Oscar Sund.

2) Administrative Report for 1940—45. The members of the following countries stated that they had not had any opportunity for carrying out work in the area: Denmark, England, Iceland, Scotland.

With regard to the Norwegian work the acting Chairman gave a short review of the work carried out in order to keep the most important series of observations going. With this object, 32 cruises had been made mostly in the fiords and the Skærgaard from Utsira to Tromsø. In Lofoten it had been possible to continue the work on cod; as regards the herring, large herring and spring herring had been especially the object of examination. The work on sprat had been continued almost as usual. As far as the artificial hatching of bastards between plaice and flounder was concerned, however, the war had unfortunately interrupted the control started to examine the effect of this work carried out from 1935 to 1939, and a new start will have to be made. Investigations into *Pandalus borealis* have given interesting information regarding the advent of sexual maturity in the fiords of northern Norway and Spitsbergen as against the Oslofiord.

3) Herring Investigations. At the initiative of Dr. Hjort the advisability of taking larger or smaller samples of herring was discussed. Dr. Friðriksson suggested that the Alaskan method for tagging herring be used. Recommendations III, 1 and 2 were passed.

4) The halibut question and the depletion of the stock was discussed and it was suggested that the migrations of halibut should be studied through marking experiments within the whole area.

5) The revised list of members was accepted.

6) Mr. Rollefsen was elected Chairman for the ensuing year.

II. Programme of Work.

1) Denmark: A cruise of the "Dana" may possibly be undertaken in the spring across the area. Work to be arranged by correspondence.

2) England: Trawlers will continue their trawling round Bear Island which they have started recently with good results. Scientific observers will from time to time take part in these cruises, and take special regard to size, age, and food. Fishery statistics will be studied.

3) Norway: Extension of investigations into Skrei and Loddetorsk as well as bank cod, and coastal cod, further haddock and saithe.

4) Scotland: No particular work. Measuring work to be performed by young students who will concentrate on haddock work and scale observations.

III. Recommendations.

1) The Committee wishes to emphasize the importance of obtaining adequate samples for the study of herring and cod in Norwegian waters, not less than 10,000 large herring and 15,000 cod.

2) The Committee recommends that two special Scientific Meetings be held in conjunction with the Council Meeting next year to consider a) herring problems and b) cod problems[1]).

[1]) Amended by the Consultative Committee to consider herring only; see the Report of this Committee, II, 5.

North-Western Area Committee.

Chairman: Dr. Å. Vedel Tåning.

The Committee met on October 16th, 1945, at 10.30 a. m.

I. Proceedings.

1) The Chairman opened the meeting and remembered the late Mr. Oscar Sund, who had been a member of the Committee. The list of members of the Committee as well as of the Sub-Committee on the Faxa Bay and Faroe questions was revised, and the revision adopted with the addition that Belgium should be asked by the office to appoint a member as proposed by the Belgian delegate at the meeting on May 15th 1939.

2) The Chairman laid the administrative report before the Committee; he gave a short account of the work carried out by Danish scientists during the war period, emphasizing the very great difficulties which had practically prevented all work at sea. Mr. Friðriksson gave a survey of the work carried out at Iceland, especially regarding herring, and Mr. Paul M. Hansen reported on the work on cod and particularly on results from the marking experiments in Greenland waters.

After some questions from Dr. Russell, Dr. Clark and Mr. Rollefsen the administrative report was adopted.

3) The Chairman reviewed the previous programme of work and suggested that it should be continued on the same lines as hitherto. The members agreed to the general programme (II, 1) and the work to be carried out by the various countries was planned as given in II, 2 having due regard to the present difficult circumstances.

4) Referring to the meeting of the Sub-Committee on Thursday the 18th the Chairman proposed the work to be continued; he laid before the Committee the proposals of the 1939-meeting in a somewhat revised form asking the Committee to adopt them. Recommendations III, 1—3 were adopted after some discussion.

II. Programme of Work.

1) General Work. Research work as before on cod, haddock, plaice, halibut, and herring; the work on the herring should be extended in collaboration with the North-Eastern Area Committee; special emphasis should be laid upon the study of such alterations in the stocks of the important species of fishes which might have occurred during the war; and more attention should be given to the marking of fish, especially cod, halibut, and, if possible, also herring. Research work on some other species, e. g., lemon sole, was also emphasized.

2) Work to be carried out by the various countries.

a) Denmark: If possible, a cruise with the "Dana" in the area. Marking experiments, general routine work etc. to be continued. Co-operation with the North-Eastern Area Committee in the south-eastern part of the area. As a new vessel will be available for work in Greenland waters investigations will be carried out on an enlarged scale in this area.

b) England: No work at sea could be promised for the year, but fishery statistics from the area will be compiled, if possible also market measurements.

c) France: No work could be promised for the year.

d) Holland: No work could be promised for the year.

e) Iceland: Routine work to be continued as in the pre-war years. Investigations into the life-cycle of *Calanus finmarchicus*. Tagging experiments on herring, preferably in collaboration with Norway.

f) Norway: A cruise from Spitsbergen to East Greenland has been prepared (marking of fish etc.). The thermograph service on the steamer routes between Norway and Iceland will be started again as soon as possible.

g) Scotland: A cruise will be arranged for to the Faroe area as previous to the war.

h) Sweden: A cruise to the Faroe area has been planned.

III. Recommendations.

1) The editorial members of the Sub-Committee (Mr. Friðriksson, Mr. Graham and Dr. Tåning) should meet during the winter in London or some other place and prepare for issue the final report on the Faxa Bay Question as MS in proof.

2) The Sub-Committee should meet one or two days before the next Council Meeting in order to prepare a recommendation on the Faxa Bay Question to the Council.

3) As the work on the final report of the Sub-Committee will be laid especially upon the Secretary of the Sub-Committee, who has been allowed expenses to work in Copenhagen from time to time, the Sub-Committee proposes expenses and honorarium to be granted him.

Report of the Sub-Committee on the Faxa Bay and the Faroe Question.

Chairman: Dr. Å. Vedel Tåning.
The Sub-Committee met on October 18th, 1945, at 2.30 p. m.
His Excellency Minister Jakob Møller was present as a guest.

The Chairman opened the meeting and welcomed the Icelandic Minister, Jakob Møller, as a guest.

A. The Faroe Question. The Chairman reviewed the work which had been done since the Committee was started in 1938, and informed the members about two papers which had been prepared but not yet circulated owing to the war conditions. A paper by the Chairman on cod marking experiments in Faroese waters was submitted. It was recommended that work should be continued according to programme, taking due regard to possible alterations caused by the war. Mr. Graham promised to give a survey of the yield of the English trawl fisheries in the area on the same line as those on which the lemon sole and other fishes had been treated by Dr. Rae. It was agreed that the Danish Government should be informed by letter, that owing to the delay caused by the war the work could not be finished until after a couple of years.

B. Faxa Bay Question. The Chairman read three recommendations, adopted by the North-Western Area Committee on Tuesday last where the work of the Sub-Committee had been considered. He mentioned the bottom investigations that had been carried out and the results of which had been published by Dr. Hermann Einarsson. Further he drew attention to a memorandum on the question submitted by the Icelandic Delegation at the Fisheries Conference held in London in 1943, and referred to a meeting between himself and Mr. Friðriksson in July last, where it was decided to continue the trawling work in the Bay this year. Then he mentioned the papers which had been circulated and drew attention to the report from the meeting in Faxa Bay in July 1939.

Then Mr. Friðriksson read two papers:
a) "Number of fishing vessels at Iceland especially in Faxa Bay according to observations of patrol boats in the years 1939, 1940, 1941" and
b) "On the density of fish in the Faxa Bay before and after the war years".

It was agreed that these papers, as well as those earlier circulated, should if so desired, be submitted to the members, and such remarks, objections etc., which might arise should be forwarded to the Chairman in due time before the meeting of the editorial members. After some discussion in which Mr. Graham and Mr. de Watteville participated, it was agreed that Dr. Rae should be asked to include in his first report on the lemon sole such material as might be available. Finally Mr. Friðriksson was asked to collect statistical information on the landings from Danish seine in Faxa Bay during the war years.

The Chairman was re-elected.

Atlantic Slope Committee.

Acting Chairman: Prof. Jean le Gall.
The Committee met on October 17th, 1945, at 10.00 a. m.

I. Proceedings.

1) The acting Chairman asked the members to honour the memory of the members of the Atlantic Slope Committee and the Atlantic Committee who have passed away since the last meeting of the Committee in 1939.

2) Reorganization of the Committee. A new Committee constituted itself with the experts of the various countries represented on the Committee.

3) Work of the Committee executed during the period 1939—45. The acting Chairman stated the difficult conditions under which the restricted work of the Committee had had to be carried out. The following communications were made and discussed:—

Jean Furnestin: Contribution to the biological study of the Atlantic pilchard.

P. Desbrosses: Remarks on the mean vertebral number of the pilchard of Brittany.

Jean Furnestin: Observations on the biology of the anchovy.

L. Faure: Contributions to the study of the sprat. (The sprat in the bay of Douarnenez.)

Letaconnoux: Biology of the genus Trachurus in the Bay of Biscay.

J. Cadenat: A system for the classification of the species of the genus Scorpoena.

P. Desbrosses: The whiting on the French coast of the Atlantic.

These papers will be published immediately in the *Revue des Travaux de l'Office des Pêches.*

Mr. Graham, England, gave an account of the work carried out by

C. F. Hickling, on pilchard,

P. G. Corbin, on the mackerel, its spawning and larval stages,

C. F. Hickling, on the hake and the fluctuations in the stock during the war.

These papers also will be published immediately.

4) Prof. le Gall was elected Chairman of the Committee.

II. Programme of Work.

The following programme was adopted by the Committee:

A. Continuation of biological studies in accordance with the scheme worked out.

B. Cruises — work at sea.

France. The periodical cruises will be taken up as soon as possible by the protection vessels of the Navy and of the merchant marine. Early in the year 1946 the "Président Théodore Tissier" will carry out a first hydrographical cruise in the waters of the Atlantic Slope. A second cruise is contemplated to Newfoundland—Bermuda, the West Indies and the west coast of Africa.

England. As soon as the new research vessel has been taken over investigations will be made in the waters of the Atlantic Slope.

Denmark. The research vessel "Dana" will work in the Faroese waters and probably west of the British Isles in accordance with a programme to be worked out in collaboration with France.

III. Recommendations.

Since the meeting of pilchard experts which should have been held at Biarritz in 1940, could not take place owing to circumstances, the Atlantic Slope Committee asks that this meeting be maintained in principle and that it be postponed to take place after the meeting of herring experts who will discuss the methods for studying clupeoids.

Northern North Sea Committee.

Chairman: Dr. R. S. Clark.

The Committee met at 2.30 p. m. on October 16th, 1945.

I. Proceedings.

1) The Chairman welcomed the members of the Committee after six years of inactivity. Three members, Professor Siedlecki, Mr. Sund and Mr. Davis lost their lives as a result of the war and respectful homage was paid to their memory. To fill two of the vacancies MM. Lea and Wimpenny were elected, while M. Desbrosses was nominated as the French representative. The last administrative report (Rapp. et Proc.-Verb., Vol. No. 113) was placed on the table and the general scheme of work detailed therein was approved. Little or no work was possible within the Area during the war, but Drs. Andersson and Aage Jensen gave brief outlines of some observations in herring from the Fladen Area.

2) Dr. Clark was re-elected Chairman.

II. Programme of Work.

Until the position regarding ships and staff is cleared up nothing very definite can be envisaged at present, but the following proposals were put forward.

Denmark: Some general work on the "Dana" during passages to and from the Faroes and Iceland. Haddock data on periodic cruises in the North Sea. Herring trawling in the Fladen Area.

England: Haddock data — measurements and statistics.

France: Market measurements and, if possible, work on commercial trawlers.

Visits of protection vessels to the herring grounds as soon as ships are available.

Norway: Collaboration in general herring and hydrographical investigations. Hydrographical cruises between Norway and Scotland.

Marking experiments on haddock.

Scotland: Periodic cruises of the research vessels with haddock and herring as the main objectives. Lemon sole and halibut will also be given preferential treatment while hydrography and plankton observations will be made in close association with the fishery biological work. Shellfish will also receive attention, especially lobsters, and the fauna of the mud line along the west coast of Scotland will also be investigated.

Sweden: General investigations on ling and witch. Collaboration in herring work.

III. Recommendations.

1) It was recommended that there should be a Special Scientific Meeting in conjunction with the next meeting of the Council to consider general herring problems.

2) It was recommended also that there should be a meeting in Aberdeen during the spring of 1946 to discuss the methods employed in herring research — the countries to be represented being Denmark, England, France, Norway, and Scotland.

Representation from other countries at their own expense would be welcome. Dr. Clark agreed to act as Convener.

Southern North Sea Committee.

Acting Chairman: Dr. E. S. Russell.
The Committee met at 4 p. m. on October 16th, 1945.

I. Proceedings.

1) Dr. Täning and Dr. Aage J. C. Jensen gave an account of the work carried out during the war on the small plaice of the Waddensea and on commercial samples from the open North Sea.

2) M. Desbrosses and M. le Gall gave a résumé of a paper by M. Delpierre on the daylight fishery for spent herring along the Belgian and the adjacent French coasts, which reached large proportions during the war.

3) The Chairman and Dr. Clark reported on the small amount of work which had been possible in Great Britain during the war, consisting mainly of the continued collection of fishery statistics and some fish measurements.

4) Changes in the membership of the Committee were approved.

5) Mr. R. S. Wimpenny was elected Chairman.

II. Programme of Work.

Denmark: Continuation of work on plaice and dabs in the Waddensea and North Sea. Cruise by "Dana", if possible.

England: Marking experiments on plaice if ship is available. Market measurements. Trawler trips. Herring investigations. Hydrographic lines.

France: Daily observations, surface and subsurface, of temperature, salinity, and plankton. Surface temperatures and salinities on lines, Dover-Dunkirk, Folkestone-Boulogne, Newhaven-Dieppe, in collaboration with Great Britain. Market measurements, trawler trips, if possible.

Holland: Market measurements at Ymuiden and age-determinations. Investigation of sole. No vessel available.

Norway: Thermograph lines.

Scotland: Herring investigations with a special ship, if available, including work on herring larvae. Cruise to Dogger Bank.

III. Recommendations.

The Committee desires to support the proposal of the Northern North Sea Committee regarding a Special Scientific Meeting on Herring and a meeting of herring experts to discuss methods.

Transition Area Committee.

Chairman: Dr. H. Blegvad.
The Committee met on October 17th, 1945, at 11.30 a. m.

I. Proceedings.

1) Communications were delivered on the work carried out by the various countries. Especially the question of the protection of the stock of lobster, Norway lobster and the Norwegian prawn was discussed; furthermore the problems regarding the races, growth and spawning of the sprat were considered. A report was delivered on the Norwegian investigations of the cod along the Skagerak coast. It was unanimously agreed that a meeting of herring experts should be held after this Council Meeting, see III, 2.

2) Dr. H. Blegvad was re-elected Chairman for the ensuing year. If he should be prevented from this action, Dr. E. M. Poulsen was elected as his successor[1]).

II. Programme of Work.

The future work should comprise mainly the same species of fish and other animals as mentioned in the programme of 1939 (Herring, Sprat, Cod, Haddock, Plaice, Sole, Dab, Flounder, Turbot, Witch, *Pandalus*, *Nephrops*) with special reference to the alterations in the stocks of haddock, plaice and lemon sole during the war.

III. Recommendations.

1) The Committee is of opinion that the question concerning the protection of *Pandalus borealis*, *Nephrops norvegicus* and *Homarus vulgaris* ought to be discussed as soon as possible with representatives of the Governments concerned. The Committee expressed the wish that the Norwegian member of the Committee should induce his Government to initiate such deliberations.

2) The Committee recommends that a meeting of herring experts from Norway, Sweden and Denmark should be held after this Council Meeting on October 20th to 22nd in Copenhagen[2]).

[1]) At the last sitting of the Council Dr. Blegvad was appointed General Secretary and relinquished the Chairmanship to Dr. Poulsen.

[2]) See the report of this meeting this Volume, part II, p. 19.

Baltic Area Committee.

Chairman: Dr. K. A. Andersson.
The Committee met at 2.30 p. m. on October 17th, 1945.

I. Proceedings.

1) The following lectures were given and discussed.

a) Professor Hans Pettersson, Dr. B. Kullenberg and Dr. N. G. Johnson: The international cruise in the Baltic, July-August 1939.

b) Dr. Aa. J. C. Jensen: Danish herring investigation at Bornholm.

c) Dr. K. A. Andersson: Herring investigations in the Baltic during the last years.

d) Professor E. Palmén: Investigations carried out at the Finnish coast on the occurrence of nitrates and phosphates and their influence upon the growth of plankton.

2) Dr. K. A. Andersson was re-elected Chairman for the ensuing year.

II. Programme of Work.

The work should comprise mainly

a) Herring and cod as to age-composition of the stock, rate of growth and migration in connection with studies concerning hydrographical conditions, the migration of cod to be studied by marking experiments in a more extended degree.

b) Investigations whether the fishery conditions during the later years have caused any alterations in the stock of plaice and flounder and whether the now existing state calls for any alterations in the Southern Baltic Convention now in force.

c) Common dab and sprat.

Programme and Reports of other Committees.

Hydrographical Committee.

Chairman: Professor Martin Knudsen.

The Committee met at 4.30 p. m. on October 15th and at 4.30 p. m. on October 16th, 1945.

I. Proceedings.

The organisation of the Hydrographic Department of the Bureau was discussed. Rec. 1 and 2 were adopted.

It was agreed that the Service Hydrographique should continue its work as hitherto, i. e., that received hydrographical material should as far as possible be treated as hitherto had been the case and that scientific elaborations of old material now in hand should be continued. Rec. 3 was adopted.

The card-index compiled by the late Administrative Secretary Captain W. Nellemose was discussed. Rec. 4 was adopted.

Professor Hans Pettersson communicated on his planned investigations of the sediments of the sea bottom. This communication was received with great interest. Rec. 5 was adopted.

Dr. Jacobsen drew attention to the discussions in 1938—40 on combined hydrographical and biological investigations and proposed that this discussion should be continued. In this connexion Professor N. Zeilon reported on a Swedish plan for hydrographical investigations that might be carried out in the North Sea and adjacent waters mainly as a support for the work of the biologists. After some discussion it was agreed that the further proceeding of this matter should be laid in the hands of a sub-committee consisting of hydrographic and biological experts. Rec. 6 was adopted.

Professor Pettersson proposed that Professor M. Knudsen should be re-elected Chairman for the ensuing year. Professor Knudsen said that he intended to go to South America for some months in the coming winter and asked the meeting to reconsider the proposal of Professor Pettersson. Professor Pettersson maintained his proposal and Prof. Knudsen accepted the chairmanship.

II. Recommendations.

1) It is recommended that a Hydrographical Committee shall continue to exist as hitherto, in order that the hydrographic work of the Council may form an integral part of the Council's activity.

2) It is recommended that the Service Hydrographique of the Bureau should be maintained and a suitable staff be at disposal. To begin with this staff may consist of the Hydrographer J. P. Jacobsen, the Hydrographical Secretary J. Smed and a full day clerical assistant.

3) It is recommended that hydrographical material as hitherto shall be sent to the Service Hydrographique in order that it there may be inspected and, as far as possible, treated as hitherto.

4) It is recommended that the part of the index-cards recording biological observations shall be removed from the index. The decision as to what shall be done with these cards should be left to the biologists of the Council. It is further recommended that the hydrographical part of the card-index shall be under the supervision of the Service Hydrographique but the question of its future shall be left to the decision of the next Council meeting[1]).

5) At the meeting of the Hydrographical Committee Professor Hans Pettersson mentioned the Swedish plan for investigating the sea bottom by means of newly constructed apparatus. The Committee expressed its keen interest in this plan and recommended it to be endorsed by the Council.

6) It is recommended that a Sub-Committee for discussion of the organisation of combined hydrographical-biological investigations should be formed. As hydrographical experts for this Sub-Committee were elected Messrs. J. N. Carruthers, J. Eggvin, J. P. Jacobsen and N. Zeilon. It is further recommended that the Consultative Committee appoints biologists to serve on this Sub-Committee[1]).

[1]) Recommendations 4 and 6 were amended by the Consultative Committee, see p. 27 and 28.

Plankton Committee.

Chairman: Professor H. H. Gran.
The Committee met on October 17th, 1945, at 4.00 p. m.

I. Proceedings.

1) Administrative Report. Contributions for 1939—42 from Denmark, England, Eire and Germany have been printed (Rapp. et Proc.-Verb. Vol. No. 113). The Chairman reported from Norway that investigations have been made in inshore waters under leadership of Dr. Trygve Braarud. Dr. Braarud himself has studied the Oslo Fiord in regard to the influence of the contamination from the city on the production of phytoplankton in the fiord. Further he has cultivated a series of diatoms, peridinians and even coccolithophorids and studied the growth rate and propagation under varied conditions. From France a list of publications was submitted to the committee.

2) Professor Hans Pettersson gave the following report on D-vitamin content of phytoplankton.

According to earlier experiments phytoplankton from the spring increase has been found to yield an appreciable content of vitamin D after exposure to ultraviolet light from a quartzlamp. These experiments have been carried further during the war years in collaboration with the State Institute for Public Health in Stockholm, where the biological analysis has been carried out. From the plankton diatoms collected during the spring increase in the Gullmar Fjord the oil has been extracted and irradiated before the biological analysis. The results found varied from 120 to 2800 international units of vitamin D per gramme of the oil. With non-irradiated phytoplankton no positive results were found, nor with irradiated oil from *Noctiluca miliaris*. Separate analysis (with chickens) proved the provitamin present in the phytoplankton to be 7-dehydro cholestorin (the D_3-provitamin).

Experiments carried out with pure preparations of the same provitamin exposed to ultraviolet daylight in different depths below the surface proved a conversion into vitamin D_3 to occur in the uppermost water strata. The results, however, indicate that only about 5 % of the provitamin present may be converted into the vitamin by natural daylight penetrating on a clear day into the uppermost 1-m. layer. This means a production of a maximum of 25 international units per gramme of the oil, an effect too feeble to become observable by biological analysis.

The results may be summarized:

a) The provitamin to vitamin D_3 is undoubtedly present in the diatoms of the spring increase in variable amounts.
b) No sensible part of the provitamin is likely to become activized by natural daylight even in the surface layers.
c) The mechanism for the activization of the provitamin is therefore probably not a light reaction in the sea.
d) The penetration of ultraviolet daylight into the sea has been measured both by physical and by biological analysis.

3) Dr. Jespersen reported on the progress of the work with the plankton sheets. 6 sheets are printed (proof-sheets) and 3 were laid before the Committee as manuscripts.

4) Election of Chairman. The Chairman had wished to resign but agreed to the function one year more and was re-elected.

II. Programme of Work.

Denmark: Continued investigations on the food of the herring and collecting of plankton in the Bornholm waters.

Weekly plankton collections at one single place at the Sealand coast of the Sound.

Investigations on the plankton in the shallow waters during flood and ebb at the west coast of Jutland near Esbjerg (Waddensea).

A continuation of the examination of zoo- and phytoplankton from Icelandic and Faroese waters collected in pre-war years and possibly collections of material on a new cruise with "Dana" in these waters.

Investigations on the food of copepods and other plankton animals in Danish and more northern waters.

England: A report has been published in the Journal of the Marine Biological Association on plankton from the Flamborough Line based on monthly observations over seven years.

During 1946 little extensive work will be possible, but observations with the plankton recorder on steamer lines will be started by the University College of Hull as soon as possible. At Lowestoft study of contracted methods, and comparison of recorder and net catches will be continued.

France: The work of the coming year will depend on the facilities at hand. It might be hoped that the ship "Président Théodore Tissier" could be at disposal for some cruise.

Iceland: So far as it will be possible investigations on the contents of herring stomachs will be carried out as has been done for the past years. Further detailed investigations on the biology of *Calanus finmarchicus* will be carried out when a research vessel is available for the purpose. At the same time phytoplanktonic studies will be undertaken at certain stations especially on the herring grounds off the north coast.

Norway: Dr. Braarud and Professor Johan T. Ruud will make further studies on the production

of plankton in the Oslo Fjord. Dr. Braarud will collaborate with Dr. Eggvin in investigations on the variations in hydrography and phytoplankton through the whole year at a series of offshore stations.

Scotland: General plankton sampling during cruises of the research vessels.

Limiting factors, physical and chemical, in the production of life in the sea with a view to the elucidation of the causes of fluctuations in fish stocks.

General herring investigations.

Fertilisation experiments.

Sweden: a) Investigations on the diurnal vertical migration of plankton, especially herring larvae are intended to be taken up again as soon as the waters in the Kattegat are cleared from mines.

b) In connection with the sprat investigation the control of the amount of sprat eggs and larvae during the spawning season will be continued. Besides an investigation on the food of the sprat in plankton is planned.

General Programme. The plan on an investigation of the Faroe-Shetland Channel during the year 1940, adopted at the Berlin conference in May 1939, could not for many reasons be realized. It must be regarded as postponed.

To take in consideration what can be done in the next year the Hydrographical Committee has proposed a Sub-Committee of hydrographic and biological experts. The Plankton Committee wished to support this idea and proposed Mr. F. S. Russell and Dr. Trygve Braarud as biological members of the Sub-Committee.

III. Recommendations.

1) The Plankton Committee recommends that the publication of the Plankton Sheets for the determination of the species of Zooplankton should be continued.

2) The Plankton Committee supports the proposal of the Hydrographic Committee to form a Sub-Committee for the discussion of the organisation of combined hydrographic-biological investigations. As biological members are proposed Mr. F. S. Russell and Dr. Trygve Braarud.

Salmon and Trout Committee.

In the Chair: Professor Knut Dahl.

The Committee met on October 16th, 1945, at 11.30 a. m.

I. Proceedings.

1) The acting Chairman opened the meeting with a short memorial speech on Professor M. Siedlecki, whom the assembled honoured in rising.

2) A review of the research activities in the various countries during the war was given for Norway by Professor Knut Dahl, for Sweden by Dr. Nils Rosén, for Scotland by Mr. J. E. de Watteville, for Denmark by Mr. C. V. Otterstrøm and for Finland by Professor Dr. T. H. Järvi.

3) A plan for international co-operation in marking of salmon in the sea was discussed. See II.

4) A paper by Professor T. H. Järvi, "On the Periodicity of Salmon Reproduction in the Northern Baltic and its Causes" was submitted to the Committee, which entrusted a Sub-Committee consisting of Professor Dahl and Dr. Rosén to report directly (see below) to the Consultative Committee as regards the printing of Professor Järvi's paper.

5) Professor Dahl was elected Chairman for the ensuing year.

II. Programme of Work.

1) An international co-operation in marking of salmon in the sea should be established in order to study the international character of salmon migrations.

2) The choice of marking-places should be left to the participating countries.

3) The methods of handling and marking of the salmon should be the same for all participating countries.

4) The interested countries should employ the same list for recording of marking particulars (see Dahl & Somme 1935).

5) It was submitted to Mr. Einar Lea to suggest types of marks to be employed.

6) Lists of records of the markings should be treated by a Sub-Committee for publication of a summary of the results.

The Sub-Committee appointed by the Salmon and Trout Committee to report on Professor Järvi's treatise entitled "On the Periodicity of Salmon Reproduction in the Northern Baltic Area and its Causes" have perused Professor Järvi's paper and will give as its opinion that the paper ought to be printed by the Council, perhaps with the exception of pt. 3 in the contents "The Material". The appendices ought to be printed. The graphic representations of water levels may be printed in couples.

Charlottenlund, October 16th, 1945.

(sign.) Knut Dahl. Nils Rosén.

Whaling Committee.

In the Chair: Mr. A. T. A. Dobson.

The Committee met on October 17th, 1945, at 4.00 p. m.

At the request of the Council, Mr. Dobson gave those present a short historical account of what had happened as regards whaling since the outbreak of war. Whaling on a limited scale had taken place in 1939—40 and 1940—41, but not since. In anticipation of post-war whaling, an international whaling conference had been held in London in January 1944 at which some modifications had been made in the International Agreement of 1937, in respect of the season 1945—46 about to start. These modifications had now been ratified, and a further conference was due to be held on November 20th, 1945, to deal with the season 1946—47. It was also the intention of the U.S.A. Government to convene an international conference in 1946 for discussing whaling problems of a long distance character.

Dr. Ruud gave an interesting account of the scientific observations which had been carried out in Norway during the war years and stated that he was still in touch with Dr. Mackintosh of the Discovery Committee on the subject of whale marking.

It was decided that the Whaling Committee should be reconstituted at the next meeting of the Council in 1946.

Rapport et Recommandations du Comité Consultatif.

Président: Dr. E. S. Russell.

Le Comité s'est réuni le 15 Octobre 1945 à 15 h. 30 et le 18 Octobre à 10 h.

I. Compte-rendu.

1) Le Président souhaite la bienvenue aux membres présents et déplore l'absence de ceux qui ont disparu.

2) Le Président insiste sur l'importance qu'il y a de se remettre rapidement au travail et d'établir un nouveau programme en tenant compte des circonstances présentes.

3) Quelques additions sont faites au programme distribué à la réunion du Conseil et des titulaires sont désignés pour prendre charge de chacun des quatre Comités actuellement sans Présidents.

4) Le Président donne un large aperçu du travail futur qui devrait être entrepris par les Comités.

5) Le Président attire l'attention sur les conventions de Londres de 1937 et 1943 et déclare que le Gouvernement britannique a étudié la question d'une action ultérieure qui a été considérée nécessaire, mais que l'attitude officielle du Gouvernement ne peut pas encore être rendue publique.

6) Les rapports et les recommandations des divers Comités sont examinés (Voir recommandations 1 à 5).

7) Une courte discussion a lieu quant à la reprise de la publication du *Journal du Conseil*. La Recommandation 6 est adoptée.

8) Le premier numéro des *Annales Biologiques* préparé par le Dr. Blegvad est soumis à discussion et le Dr. Blegvad est complimenté sur son travail.

Le Dr. Blegvad commente certain aspect hétérogène de cette publication dû aux difficultés provoquées par la guerre de se mettre en contact avec les auteurs. Quelques articles, dit-il, auraient pu être publiés dans le *Journal du Conseil*, mais sa parution n'a pas été possible pendant la guerre.

Il est décidé que des efforts seront faits pour arriver à une plus grande "standardisation" des figures et des tables dans le prochain numéro. L'importance d'une dissémination rapide des résultats est examinée. Le Comité, finalement, décide que la publication sera poursuivie.

9) Le Dr. E. S. Russell est réélu Président.

II. Recommandations.

1. Rapports des Comités.

Les rapports des Comités sont présentés et les recommandations suivantes sont acceptées, en sus des recommandations sur les réunions spéciales qui sont rapportées dans une autre section.

a) Comité du Nord-Est: faisant ressortir l'importance de l'étude d'un plus grand nombre d'échantillons de harengs et de morues dans les eaux norvégiennes.

b) Comité du Nord-Ouest: dépenses et honoraires du Secrétaire du Sous-Comité de la Baie de Faxa.

c) Comité du Plateau Continental Atlantique: réunion pour discussion des méthodes d'étude de la sardine. Cette réunion aura lieu ultérieurement.

d) Secteur de Transition: les Gouvernements intéressés considéreront la protection de *Pandalus borealis*, *Nephrops norvegicus* et *Homarus vulgaris*.

e) Hydrographie: le Conseil approuve l'étude du fond de la mer par les nouvelles méthodes développées en Suède.

f) Plancton: la publication des fiches planctoniques pour la détermination du zoo-plancton sera continuée.

g) Baleine: le Comité de la Baleine sera reconstitué et se réunira lors de la prochaine séance plénière du Conseil.

h) Saumon et Truite: le rapport du Professeur Järvi sera publié en entier ou partiellement.

2. Index des Cartes.

La recommandation 4 du Comité Hydrographique concernant l'avenir de l'index est soumise à un sous-comité constitué par le Dr. Tåning, le Prof. Knudsen (en son absence le Dr. J. P. Jacobsen), et le Dr. Blegvad qui examineront séparément les cartes hydrographiques et biologiques.

3. Recherches Hydrographiques-Biologiques.

La recommandation 6 du Comité Hydrographique et la recommandation 2 du Comité du Plancton sont

adoptées, qu'un Sous-Comité pour la discussion de l'organisation des recherches hydrographiques et biologiques soit constitué. En outre, le Comité recommande le Dr. Blegvad comme Président et le Dr. Jacobsen comme Secrétaire. Le Comité sera constitué par le Dr. Blegvad (Président), Dr. Jacobsen (Secrétaire), Dr. Eggvin, Prof. Zeilon, Mr. F. S. Russell and Dr. Braarud.

4. Réunion des Experts.

a) La recommandation 2 du Comité du Secteur de Transition statuant que les experts pour l'étude du hareng dans la zone en question se réuniront du 20 au 22 Octobre 1945, est adoptée.

b) Selon la recommandation 2 du Comité du Nord de la Mer du Nord, une réunion des experts pour l'étude du hareng dans la Mer du Nord se tiendra à Aberdeen au printemps avec une représentation des délégués de l'Angleterre, du Danemark, de l'Ecosse, de la France et de la Norvège. Les délégués des autres pays se déplaçant à leurs frais seront les bienvenus. Le Dr. Clark accepte d'organiser cette réunion.

c) Les recommandations 1 et 2 du Comité du Secteur Nord-Ouest sont adoptées. Les trois membres éditeurs du Sous-Comité de la Baie de Faxa se réuniront en Angleterre au début de cet hiver; ce sous-comité se réunira 1 ou 2 jours avant la réunion du prochain Conseil.

5. Réunion Scientifique Spéciale.

Les recommandations des différents Comités proposant qu'une réunion spéciale sur les problèmes du Hareng soit tenue à la prochaine réunion du Conseil sont adoptées. On s'attend à ce que cette réunion durera deux jours et le Dr. Andersson accepte d'en être l'organisateur.

6. Journal du Conseil.

Le Comité Consultatif recommande à l'unanimité que le *Journal du Conseil* paraisse le plus tôt possible.

Rapports et Programmes des Comités des Secteurs.

Comité du Secteur Nord-Est.

Faisant fonction de Président: M. G. Rollefsen.
Séance du 16 Octobre 1945 à 10 heures.

I. Compte-rendu.

1) Le Président intérimaire salue la mémoire du dernier Président, M. Oscar Sund.

2) Rapport administratif de 1940—1945. Les membres des pays suivants exposent qu'ils n'ont pas eu d'occasion de poursuivre le travail dans le secteur: Angleterre, Danemark, Ecosse, Islande.

Quant au travail norvégien, le Président intérimaire donne un court aperçu du travail poursuivi afin de continuer les observations les plus importantes. Dans ce but, 32 croisières ont été faites surtout dans les fjords et le Skaergaard d'Utsira à Tromsø. Aux Lofotens, il a été possible de continuer le travail sur la morue; le hareng, le grand hareng et le hareng de printemps ont été spécialement l'objet d'examens. Le travail sur le sprat a été continué comme d'habitude. En ce qui concerne les croisements artificiels entre la plie et le flet, la guerre a interrompu les contrôles effectués pour examiner les résultats de ce travail poursuivi entre 1935 et 1939. Cette étude sera reprise. Des recherches sur le *Pandalus borealis* ont donné des renseignements sur sa maturité sexuelle dans les fjords du nord de la Norvège et du Spitsberg, ainsi que dans le fjord d'Oslo.

3) Recherches sur le Hareng. Sur l'initiative du Dr. Hjort, l'opportunité de prendre des échantillons de harengs plus ou moins nombreux est discutée. Le Dr. Friðriksson suggère d'employer la technique utilisée dans l'Alaska pour marquer le hareng. Recommandations III, 1 et 2 sont adoptées.

4) La question du flétan et la diminution de ce stock sont discutées et il est suggéré que les migrations du flétan seront étudiées par des expériences de marquage dans la zone entière.

5) La liste révisée des membres est acceptée.

6) M. Rollefsen est élu Président pour l'année suivante.

II. Programme de travail.

1) Angleterre: Des chalutiers continueront leur pêche autour de l'Ile aux Ours où ils ont obtenu récemment de bons résultats. Des Scientifiques prendront part, de temps en temps, à ces croisières et observeront spécialement les dimensions, l'âge et la nourriture des poissons. Des statistiques de pêche seront étudiées.

2) Danemark: Il sera peut-être possible d'entreprendre au printemps une croisière du "Dana" à travers le secteur. Le travail sera réglé par correspondance.

3) Ecosse: Pas de travail particulier. Le travail de mensuration sera exécuté par de jeunes étudiants qui limiteront leur travail à l'églefin et à l'étude des écailles.

4) Norvège: Recherches étendues sur la morue "Skrei" et sur la morue "Loddetorsk" aussi bien que sur la morue des bancs et la morue côtière, puis sur l'églefin et le lieu noir.

III. Recommandations.

1) Le Comité insiste sur l'importance d'obtenir des échantillons adéquats sur l'étude du hareng et de la morue dans les eaux norvégiennes, pas moins que 10,000 grands harengs et 15,000 morues.

2) Le Comité recommande que 2 réunions scientifiques spéciales soient tenues conjointement avec la réunion du Conseil l'année prochaine pour considérer: a) les problèmes du hareng; b) les problèmes de la morue[1]).

[1]) Modifié par le Comité Consultatif, le hareng seul reste pris en considération. Voir le rapport de ce Comité: II, 5.

Comité du Secteur Nord-Ouest.

Président: Dr Å. Vedel Tåning.
Réunion du 16 Octobre 1945 à 10 h. 30.

I. Compte-rendu.

1) Le Président ouvre la séance et rappelle le souvenir de M. Oscar Sund, qui fut membre du Comité. La liste des membres du Comité ainsi que celle du Sous-Comité de la Baie de Faxa et des Féroës sont revisées et cette revision est adoptée en ajoutant la Belgique à qui il sera demandé de désigner un membre ainsi que l'avait proposé le délégué Belge à la réunion du 15 Mai 1939.

2) Le Président présente le rapport administratif au Comité; il donne un court compte-rendu du travail accompli par les Scientifiques Danois pendant la guerre en insistant sur les très grandes difficultés qui ont pratiquement géné tout le travail à la mer. M. Friðriksson produit un rapport sur le travail poursuivi en Islande, spécialement sur le hareng, et M. Paul M. Hansen rend compte du travail sur la morue et particulièrement sur les résultats des expériences de marquage dans les eaux du Groenland.

Après quelques questions du Dr. Russell, du Dr. Clark et de M. Rollefsen, le rapport administratif est adopté.

3) Le Président analyse le précédent programme de travail et suggère de le continuer sur les mêmes bases. Les membres adoptent le programme général (II, 1) et le plan de travail qui sera poursuivi par les différents pays est établi et donné au II, 2 en prenant en considération les circonstances difficiles actuelles.

4) Faisant allusion à la réunion du Sous-Comité du jeudi 18, le Président déclare que le travail sera continué; il mit devant le Comité les propositions de la réunion de 1939 légèrement revisées et demande au Comité de l'adopter. Recommandations III, 1—3 sont adoptées après discussion.

II. Programme de travail.

1) Travail général. Travail de recherches précédemment établi sur la morue, l'églefin, la plie, le flétan et le hareng. Le travail sur le hareng sera étendu en collaboration avec le Comité du Secteur Nord-Est. Un développement spécial sera donné à l'étude des modifications du stock des espèces importantes de poissons qui se sont produites pendant la guerre; et l'attention sera portée sur le marquage des poissons, spécialement la morue, le flétan et si possible aussi le hareng. Les recherches sur quelques autres espèces, e. g., telle que la limandière (lemon sole, par exemple) seront développées.

2) Travail poursuivi par les différents pays:

a) Angleterre: Aucun travail en mer ne sera promis pour l'année, mais des statistiques de pêche de la zone seront recueillies et si possible des mensurations sur les marchés.
b) Danemark: si possible croisière du "Dana" dans le secteur. Les expériences de marquage, le travail général etc. seront continués. Coopération avec le Comité du Secteur Nord-Est dans la partie Sud-Est de la zone. Un nouveau navire sera disponible pour le travail dans les eaux du Groenland où les recherches seront développées sur une plus grande échelle.
c) Ecosse: Une croisière sera faite dans la zone des Féroës comme avant guerre.
d) France: Pas de travail envisagé pour l'année.
e) Hollande: Pas de travail envisagé pour l'année.
f) Islande: Le travail coutumier sera continué comme dans les années ayant précédé la guerre. Recherches dans le cycle vital de *Calanus finmarchicus*. Recherches sur le hareng, de préférence en collaboration avec la Norvège.
g) Norvège: Une croisière de Spitsberg au Groenland Est a été preparée (marquage du poisson etc.). Le service du thermographe sur les routes maritimes entre la Norvège et l'Islande sera commencé aussitôt que possible.
h) Suède: Une croisière dans la zone des Féroës est prévue.

III. Recommandations.

1) Les membres éditeurs du Sous-Comité (M. Friðriksson, M. Graham et le Dr. Tåning) se réuniront dans le courant de l'hiver à Londres ou dans un autre endroit et prépareront le rapport final sur la question de la baie de Faxa.

2) Le Sous-Comité se réunira un ou deux jours avant la prochaine réunion du Conseil afin de préparer pour le Conseil une recommandation sur la question de la baie de Faxa.

3) Comme le travail sur le rapport final du Sous-Comité sera remis spécialement au Secrétaire du Sous-Comité à qui ont été accordés des crédits pour travailler de temps à autre à Copenhague le Sous-Comité propose qu'une subvention et des honoraires lui soient attribués.

Rapport du Sous-Comité de la Baie de Faxa et Question des Féroës.

Président: Dr. Å. Vedel Tåning.
Réunion du 18 Octobre 1945 à 14 h. 30.
Son Excellence le Ministre Jakob Møller était présent comme invité.

Le Président ouvre la séance et souhaite la bienvenue au Ministre Islandais Jakob Moller, venu en qualité d'hôte.

A. Question des Féroës.

Le Président revise le travail accompli depuis la création du Comité en 1938 et informe les membres que deux rapports ont été préparés, mais n'ont pas été mis en circulation par suite des conditions de guerre. Un rapport du Président sur les expériences de marquage de la morue, dans les eaux des Féroës est présenté. Il est recommandé de poursuivre le travail en tenant compte des altérations possibles causées par la guerre. M. Graham promet de produire un rapport sur les pêches des chalutiers anglais dans cette zone sur le même plan que celui précédemment établi par le Dr. Rae sur la sole limandière (lemon sole). Il est décidé d'informer le Gouvernement Danois que par suite de l'interruption due à la guerre, ce travail ne pourra pas être terminé avant deux ans.

B. Question de la Baie de Faxa.

Le Président lit trois recommandations adoptées par le Comité du Secteur Nord-Ouest à sa séance du Mardi précédent et dans lesquelles le travail du Sous-Comité a été examiné. Il mentionne les investigations qui ont été poursuivies dans les couches profondes et les résultats qui ont été publiés par le Dr. Hermann Einarsson. Il attire ensuite l'attention sur un mémorandum sur la question soumise par la Délégation Islandaise à la Conférence sur les pêches tenue à Londres en 1943 et fait état d'une réunion qu'il a eue avec M. Friðriksson en juillet dernier et où il a été décidé de continuer cette année le chalutage dans cette baie. Il mentionne enfin les notes mises en circulation et attire l'attention sur le rapport de la réunion dans la Baie de Faxa en juillet 1939.

M. Friðriksson lit deux rapports:

a) "Nombre des bateaux de pêche en Islande, spécialement dans la baie de Faxa selon les observations des bateaux patrouilleurs dans les années 1939, 1940 et 1941" et

b) "Sur la densité du poisson dans la baie de Faxa avant et après les années de guerre".

Il est décidé que ces rapports, ainsi que ceux déjà mis en circulation, seront soumis aux membres du Comité, à leur demande, et les remarques et les objections qui pourront s'élever seront transmises au Président en temps voulu avant la réunion de la commission éditoriale. Après une discussion dans laquelle M. Graham et M. de Watteville participent il est décidé que le Dr. Rae sera informé d'inclure dans son premier rapport sur la sole limandière l'essentiel dont on pourra se servir. Finalement M. Friðriksson est chargé de réunir les informations statistiques sur les quantités de poisson débarqué provenant des pêches à la seine danoise dans la Baie de Faxa pendant les années de guerre.

Le Président sortant est réélu.

Comité du Plateau Continental Atlantique.

Faisant fonction de Président: M. le Prof. Jean le Gall.
Réunion du 17 Octobre 1945 à 10 h. 00.

I. Compte rendu.

1) Le Président intérimaire prie ses collègues du Comité de s'associer au souvenir ému qu'il adresse à la mémoire des membres du Comité du Plateau Continental Atlantique et du Comité Atlantique disparus depuis la dernière réunion du Comité en 1939.

2) Réorganisation du Comité. Un nouveau Comité est constitué avec les experts des différents états représentés.

3) Travaux du Comité pendant la période 1939—45. Le Président intérimaire expose les conditions difficiles dans lesquelles les quelques travaux du Comité ont pu être effectués. Les communications suivantes sont faites et discutées:—

Jean Furnestin: Contribution à l'étude biologique de la sardine atlantique.

P. Desbrosses: Remarques sur la moyenne vertébrale de la sardine de Bretagne.

Jean Furnestin: Observations sur la biologie de l'anchois.

L. Faure: Contributions à l'étude du sprat (Le sprat en baie du Douarnenez).

Letaconnoux: Biologie du genre Trachurus dans le Golfe de Gascogne.

J. Cadenat: Systématique des espèces du genre Scorpoena.

P. Desbrosses: Le merlan de la côte Française atlantique. Ces travaux paraîtront incessament dans la Revue des Travaux de l'Office des Pêches.

Mr. Graham (Angleterre) expose les travaux réalisés par:—

C. F. Hickling sur la sardine;

P. G. Corbin sur la ponte et les stades larvaires du maquereau;

C. F. Hickling sur le merlu et les fluctuations du stock pendant la guerre.

Ces travaux seront incessament publiés.

4) Election du Président. M. le Prof. Jean le Gall est élu Président du Comité.

II. Programme de travail.

Le programme de travaux suivant est adopté par le Comité: —

A. Continuation des études biologiques suivant le plan établi.

B. Croisières — travaux à la mer.

Angleterre. Dès qu'elle sera en possession de son nouveau navire de recherches, l'Angleterre entreprendra des investigations dans les eaux du Plateau Continental Atlantique.

Danemark. Le navire de recherches "Dana" travaillera dans les eaux des Féroës et probablement à l'ouest des îles Britanniques suivant un programme établi en collaboration avec la France.

France: Dès qu'il lui sera possible, la France reprendra ses sorties périodiques à bord des avisos de la Marine Nationale et des garde-pêche de la Marine Marchande. Le navire "Président Théodore Tissier" effectuera une première croisière hydrographique dès le début de l'année 1946 sur le Plateau Continental Atlantique. Le projet d'une deuxième croisière est envisagé à Terre Neuve—Bermuda, Antilles et côte occidentale d'Afrique.

III. Recommandation.

La réunion d'Experts pour la sardine qui devait se tenir à Biarritz en 1940, n'ayant pu avoir lieu en raison des circonstances, le Comité du Plateau Continental Atlantique demande que le principe de cette réunion soit maintenu et qu'elle soit reportée après la réunion d'Experts pour le hareng qui doit discuter des méthodes d'études des Clupéides.

Comité du Nord de la Mer du Nord.

Président: Dr. R. S. Clark.
Réunion du 16 Octobre 1945 à 14 h. 30.

I. Compte rendu.

1) Le Président souhaite la bienvenue aux membres du Comité réunis à nouveau après six ans d'inactivité. Trois membres, le Professeur Siedlecki, M. Sund et M. Davis sont morts pendant la guerre et un hommage respectueux est rendu à leur mémoire. Pour remplir deux des postes vacants MM. Lea et Wimpenny sont élus, tandis que M. Desbrosses est reconnu comme représentant de la France. Le dernier rapport administratif (Rapp. et Proc.-Verb. Vol. No. 113) est déposé et un schéma général du travail qui y est défini est approuvé. Peu ou pas de travail ne fut possible dans cette zone pendant la guerre, cependant les Drs. Andersson et Aage Jensen donnent un bref aperçu des quelques observations faites sur le hareng du Fladen.

2) Le Dr. Clark est réelu Président.

II. Programme de travail.

Etant donnée la situation actuelle quant au personnel et aux navires de recherches rien de très défini ne peut être envisagé à présent, mais les propositions suivantes sont mises en avant.

Angleterre: Etude de l'églefin—mensurations et statistiques.

Danemark: Quelque travail général sur le "Dana" pendant ses passages entre les Féroës et l'Islande. Collections d'observations sur l'églefin pendant les croisières périodiques dans la Mer du Nord. Chalutage du hareng dans la zone du Fladen.

Ecosse: Croisières périodiques des bateaux de recherches avec étude de l'églefin et du hareng comme objectifs principaux. L'étude de la limandière et du flétan sera particulièrement développée tandis que les observations hydrographiques et planctoniques seront faites en liaison avec les observations biologiques sur les lieux de pêche. Les crustacés recevront une attention spéciale particulièrement le homard et la faune de la ligne de boue (mud line) le long de la côte ouest d'Ecosse qui sera aussi étudiée.

France: Mensurations sur les marchés et si possible travail sur les chalutiers commerciaux.

Visites des bateaux de protection sur les fonds de pêche du hareng aussitôt que ces bateaux seront disponibles.

Norvège: Collaboration des recherches sur le hareng et des recherches hydrographiques. Croisières hydrographiques entre la Norvège et l'Ecosse.

Expériences de marquage sur l'églefin.

Suède: Recherches générales sur la lingue et la plie cynoglosse. Collaboration dans le travail du hareng.

III. Recommandations.

1) Il est recommandé de faire une Réunion Scientifique Spéciale en liaison avec la prochaine réunion du Conseil pour considérer les problèmes généraux du hareng.

2) Il est également recommandé de faire réunion à Aberdeen au printemps de 1946 pour discuter des techniques employées dans la recherche du hareng. Les pays qui seront représentés seront l'Angleterre, le Danemark, l'Ecosse, la France et la Norvège. La représentation des autres pays à leurs propres frais sera la bienvenue. Le Dr. CLARK accepte de faire acte d'organisateur de cette réunion.

Comité du Sud de la Mer du Nord.

Faisant fonction de Président: Dr. E. S. RUSSELL.
Réunion du 16 Octobre 1945 à 16 h.

I. Compte rendu.

1) Le Dr. TÅNING et le Dr. AAGE J. C. JENSEN donnent un compte rendu du travail poursuivi pendant la guerre sur les petites plies de Waddensea et sur les échantillons commerciaux de la Mer du Nord.

2) M. DESBROSSES et M. LE GALL donnent le résumé d'un rapport de M. DELPIERRE sur la pêche de jour du hareng "guai" le long des côtes belges et de la côte française voisine, pêche qui a pris une grande importance pendant la guerre.

3) Le Président et le Dr. CLARK donnent un compte rendu sur le travail limité qui est fait en Grande-Bretagne pendant la guerre, et consistant principalement de la collection continue des statistiques de pêche et des mensurations de poissons.

4) Des modifications dans la composition du Comité sont approuvées.

5) M. R. S. WIMPENNY est élu Président.

II. Programme de travail.

Angleterre: Expériences de marquage sur la plie, si un bateau est utilisable. Mensurations sur le marché. Croisières de chalutiers. Recherches sur le hareng. Lignes hydrographiques.

Danemark: Continuation du travail sur les plies et les limandes dans Waddensea et la Mer du Nord. Croisière du "Dana" si possible.

Ecosse: Recherches sur le hareng si un bateau spécial est disponible avec étude des larves du hareng. Croisière sur le Dogger banc.

France: Observations journalières, en surface et en profondeur, température, salinité et plancton. Températures à la surface et salinités sur les lignes, Douvres-Dunkerque, Folkestone-Boulogne, Newhaven-Dieppe, en accord avec la Grande-Bretagne. Mensurations sur le marché, voyages de chalutiers si possible.

Hollande: Mensurations sur le marché de Ymuiden et déterminations de l'âge. Recherche sur la sole. Pas de bateaux disponibles.

Norvège: Lignes termographes.

III. Recommandations.

Le Comité appuie la proposition du Comité du Nord de la Mer du Nord, au sujet d'une Réunion Scientifique Spéciale sur le hareng et d'une réunion des experts pour la discussion des méthodes d'étude du hareng.

Comité du Secteur de Transition.

Président: Dr. H. BLEGVAD.
Réunion du 17 Octobre 1945 à 11 h. 30.

I. Compte rendu.

1) Les communications sur le travail poursuivi par les différents pays sont lues. La question de la protection du stock de homard, de langoustine et de crevettes norvégiennes est spécialement discuté. De plus les problèmes regardant les races, la croissance et le frai du sprat furent considérés. Un rapport est présenté sur les recherches norvégiennes sur la morue le long de la côte Skagerak. Il est adopté à l'unanimité qu'une réunion des experts des harengs sera tenue après cette réunion du Conseil (Voir III, 2).

2) Le Dr. BLEGVAD est réélu Président pour l'année suivante. S'il est empêché d'exécuter cette action le Dr. E. M. POULSEN est élu comme successeur[1]).

[1]) Lors de la dernière séance du Conseil le Dr. BLEGVAD fut nommé Secrétaire Général et céda la présidence au Dr. POULSEN.

II. Programme de travail.

Le travail futur comprendra principalement les mêmes espèces de poisson et autres animaux mentionnés dans le programme de 1939 (hareng, sprat, morue, églefin, plie, sole, flet, turbot, plie cynoglosse, *Pandalus*, *Nephrops*) avec référence spéciale sur la modification des stocks d'églefin, plie et limandière (sole lémon) pendant la guerre.

III. Recommandations.

1) Le Comité est d'avis que la question concernant la protection du *Pandalus borealis*, *Nephrops norvegicus* et *Homarus vulgaris* devra être discutée aussitôt que possible avec les représentants des Gouvernements intéressés. Le Comité exprime le souhait que le délégué norvégien du Comité porte à la connaissance de son gouvernement ces délibérations.

2) Le Comité recommande qu'une réunion des experts du hareng de la Norvège, de la Suède et du Danemark soit tenue après la réunion du Conseil du 20 au 22 Octobre à Copenhague[1]).

[1]) Voir rapport de cette réunion, dans ce volume, part II, p. 19.

Comité du Secteur Baltique.

Président: Dr. K. A. Andersson.
Réunion le 17 Octobre 1945 à 14 h. 30.

I. Compte rendu.

1) Les lectures suivantes sont faites et discutées: —

a) Le Professeur Hans Pettersson, Dr. B. Kullenberg et Dr. N. C. Johnson: La croisière internationale dans la Baltique Juillet-Août 1939.
b) Dr. Aa. J. C. Jensen: Recherche sur le hareng danois à Bornholm.
c) Dr. K. A. Andersson: Recherches sur le hareng dans la Baltique pendant les dernières années.
d) Professeur E. Palmén: Recherches poursuivies sur la côte de Finlande sur la présence des nitrates et des phosphates et leur influence sur la croissance du plancton.

2) Dr. K. A. Andersson est réélu Président pour l'année suivante.

II. Programme de travail.

Le travail comprendra principalement: —

a) Etude du hareng et de la morue quant à la composition du stock au point de vue âge. Etude de la rapidité de la croissance et des migrations en liaison avec l'étude des conditions hydrographiques, la migration de la morue sera étudiée par des expériences de marquage plus étendues.
b) Recherches si les conditions de pêche au cours des dernières années ont provoqué des altérations dans le stock des plies et des flets et si la situation présente appelle des modifications de la Convention du Sud de la Baltique actuellement en vigueur.
c) Etude de la limande commune et du sprat.

Programmes et Rapports des autres Comités.

Comité Hydrographique.

Président: Le Professeur Martin Knudsen.
Réunions du 15 Octobre et du 16 Octobre à 16 h. 30.

I. Compte-rendu.

L'organisation du département hydrographique de l'office central est discutée. Les Rec. 1 et 2 sont adoptées.

Il est décidé que le Service hydrographique continuera son travail comme jusqu'à présent, c'est-à-dire que le matériel hydrographique reçu sera traité autant que possible de la même façon et que le travail scientifique du matériel actuellement à l'étude sera continué. La Rec. 3 est adoptée.

L'index composé par le dernier Secrétaire Administratif, le Capitaine W. Nellemose, est examiné. La Rec. 4 est adoptée.

Le Professeur Hans Pettersson communique ses recherches sur les sédiments du fond de la mer. Cette communication est écoutée avec grand intérêt. La Rec. 5 est adoptée.

Le Dr. Jacobsen attire l'attention sur les discussions de 1938—40 sur les recherches hydrographiques et biologiques combinées et propose que cette discussion soit continuée. A ce propos le Professeur N. Zeilon rapporte le plan Suédois sur les recherches hydrographiques qui pourront être poursuivies dans la Mer du Nord et dans les eaux adjacentes principalement comme un appui pour le travail des biologistes. Après discussion, il est décidé de mettre cette question à l'étude entre les mains d'un Sous-Comité se composant d'experts hydrographiques et biologiques. La Rec. 6 est adoptée.

Le Professeur Pettersson propose que le Professeur M. Knudsen soit réélu Président pour l'année suivante. Le Professeur Knudsen dit qu'il a l'intention de partir en Amérique du Sud pour quelques mois au cours de cet hiver et demande que le Comité reconsidère la proposition du Professeur Pettersson. Le Professeur Pettersson maintient sa proposition et le Professeur Knudsen accepte la Présidence.

II. Recommandations.

1) Il est recommandé que le Comité Hydrographique continue à exister, afin que le travail hydrographique puisse former partie intégrale de l'activité du Conseil.

2) Il est recommandé que le Service hydrographique de l'office central soit maintenu et qu'un personnel convenable soit à disposition. Pour débuter ce personnel sera constitué d'un Hydrographe: J. P. Jacobsen, d'un Secrétaire hydrographe J. Smed et par un Assistant permanent.

3) Il est recommandé que la documentation hydrographique comme par le passé soit envoyée au Service hydrographique et qu'elle soit examinée et traitée autant que possible, comme par le passé.

4) Il est recommandé que la partie des index des cartes se rapportant à des observations biologiques soit sortie de l'index. La destination à donner à ces cartes est laissée au soin des biologistes du Conseil. Il est recommandé ensuite que la partie hydrographique de l'index soit sous la surveillance du Service hydrographique, mais la question de son avenir est laissée à la décision de la réunion prochaine du Conseil[1]).

5) A la réunion du Comité Hydrographique le Professeur Hans Pettersson mentionne le plan Suédois pour les recherches au fond de la mer au moyen d'un nouvel appareil. Le Comité exprime un vif intérêt sur ce plan et recommande qu'il soit adopté par le Conseil.

6) Il est recommandé qu'un Sous-Comité pour la discussion de l'organisation des recherches hydrographiques et biologiques combinées soit constitué. Des experts hydrographes pour ce Sous-Comité sont élus, MM. J. N. Carruthers, J. Eggvin, J. P. Jacobsen et N. Zeilon. Il est recommandé en outre que le Comité Consultatif appointe les biologistes qui serviront dans ce Sous-Comité[1]).

[1]) Les Rec. 4 et 6 sont revisées par le Comité Consultatif, voir p. 39.

Comité du Plancton.

Président: Prof. H. H. Gran.
Séance du 17 Octobre 1945 à 16 h. 00.

I. Compte-rendu.

1) Rapport administratif. Les contributions du Danemark, de l'Angleterre, de l'Irlande et de l'Allemagne pour la période 1939—42 ont été publiées (Rapp. et Proc.-Verb. Vol. No. 113). Le Président rapporte que des recherches ont été poursuivies en Norvège dans les eaux littorales sous la direction du Dr. Trygve Braarud. Le Dr. Braarud a étudié lui-même le Fjord d'Oslo, en considération de l'influence de la pollution de la ville sur la production du phyto-plancton dans le fjord. Il a cultivé ensuite une série de diatomées, de péridiniens et de coccolithophorides et étudié leur croissance et leur propagation sous des conditions variées. De France, une liste de publications a été soumise au Comité.

2) Le Professeur Hans Pettersson donna le rapport suivant sur la teneur en vitamine D du phyto-plancton.

Des expériences antérieures ont démontré que le phyto-plancton provenant de l'augmentation printanière produit une teneur appréciable en vitamines D après son exposition à la lumière ultra-violette d'une lampe de quartz. Ces expériences ont été continuées pendant les années de guerre en collaboration avec l'Institut d'Etat pour la Santé Publique de Stockholm où des analyses biologiques ont été faites. L'huile extraite du plancton recueilli pendant l'augmentation printanière dans Gullmar-Fjord a été irradiée avant analyse biologique. Les résultats ont montré une teneur variable de 120 à 2,800 U. I. de vitamine D par gramme d'huile. Avec du phyto-plancton non irradié, il n'a pas été obtenu de résultat positif. Il en est de même avec l'huile irradiée provenant de *Noctiluca miliaris*. Des analyses séparées (avec des poussins) ont prouvé que la pro-vitamine présente dans le phyto-plancton est 7-dehydro cholesterine (la pro-vitamine D_3).

Des expériences faites avec une préparation pure de la même pro-vitamine exposée aux rayons ultra-violets de la lumière du jour à différentes profondeurs, prouvent qu'une conversion en vitamine D_3 se produit dans les couches d'eau supérieures. Les résultats indiquent cependant que seulement 5 % de la pro-vitamine présente peuvent être convertis en vitamine par la lumière naturelle pénétrant par un jour clair dans les couches supérieures d'un mètre d'épaisseur. Ceci se traduit par une production au maximum de 25 U. I. par gramme d'huile, effet trop faible pour être observable par analyses biologiques.

Les résultats peuvent être ainsi résumés: —

a) La pro-vitamine de la vitamine D_3 est sans aucun doute présente en quantité variée dans les diatomées de pousse printanière.
b) Aucune partie appréciable de la pro-vitamine ne peut être activée par la lumière naturelle, même dans les couches superficielles.
c) Le mécanisme de cette activation de la pro-vitamine n'est pas dû probablement à une action lumineuse dans la mer.
d) La pénétration de la lumière ultra-violette dans la mer a été mesurée à la fois par des analyses physiques et biologiques.

3) Le Dr. Jespersen signale les progrès de son travail avec les fiches planctoniques. Six feuilles sont imprimées (épreuves) et trois manuscrites sont présentées au Comité.

4) Election du Président. Le Président manifeste son désir de se retirer, mais accepte de conserver ses fonctions pendant une année encore et est réélu.

II. Programme de travail.

Angleterre: Un rapport a été publié dans le "Journal of the Marine Biological Association" sur les observations mensuelles poursuivies pendant sept ans sur le plancton de la ligne Flamborough.

Pendant 1946, un travail court sera seulement possible, mais les observations faites avec le "plankton recorder" sur les courriers à vapeur seront remises en activité par le "University College" de Hull dès que possible. A Lowestoft seront poursuivies une étude de méthodes contractées et une étude comparative sur les captures faites au filet et avec le "plancton recorder".

Danemark: Recherches continuées sur la nourriture du hareng et collection du plancton dans les eaux de Bornholm.

Pêche planctonique hebdomadaire à une place déterminée sur la côte de Seeland dans le Sund.

Recherches sur le plancton dans les eaux peu profondes pendant le flot et la marée sur la côte ouest du Jutland près de Esbjerg (Waddensea).

Continuation de l'examen du zoo et phyto-plancton provenant d'Islande et des Féroës recueilli dans les années antérieures à la guerre et collection possible de matériel au cours de la nouvelle croisière du "Dana" dans ces eaux.

Recherches sur la nourriture des copépodes et

autres animaux planctoniques dans les eaux danoises et celles situées plus au nord.

Ecosse: Des échantillons planctoniques seront pris au cours des croisières des bateaux de recherches.

Des recherches sur les conditions limites et facteurs physiques et chimiques dans la production de la vie dans la mer seront faites en vue d'élucider les causes des fluctuations dans les stocks de poissons.

Recherches générales sur le hareng.

Essais de fertilisation.

Islande: Les recherches sur les contenus stomacaux des harengs seront poursuivies aussi loin qu'il sera possible, ainsi qu'il a été fait au cours des dernières années. De nouvelles recherches sur la biologie de *Calanus finmarchicus* seront poursuivies quand un bateau de recherches sera disponible dans ce but. En même temps, des recherches sur le phyto-plancton seront entreprises dans certaines stations, spécialement sur les bancs de harengs de la côte nord.

Norvège: Le Dr. Braarud et le Professeur Johan T. Ruud feront une nouvelle étude sur la production du plancton dans le Fjord d'Oslo. Le Dr. Braarud collaborera avec le Dr. Eggvin dans des recherches sur les variations de l'hydrographie et du phyto-plancton pendant toute la durée de l'année dans une série de stations au large.

Suède: a) Des recherches sur la migration verticale diurne du plancton, spécialement des larves de harengs, seront entreprises dès que les eaux du Kattegat seront débarrassées des mines.

b) En connexion avec les recherches sur le sprat, le contrôle de la quantité d'œufs et de larves de sprat pendant la saison de ponte sera poursuivi. A côté de ces recherches, des études sur la nourriture planctonique du sprat sont envisagées.

France: Les travaux de l'année prochaine dépendront des facilités qui lui seront accordées. On peut espérer que le bateau "Président Théodore Tissier" sera disponible pour une croisière.

Programme Général: Le plan de l'étude du Canal Féroë-Shetland pendant l'année 1940 adopté à la conférence de Berlin en Mai 1939 ne pouvant être réalisé pour différentes raisons, doit être considéré comme ajourné.

Pour prendre en considération ce qui pourra être fait dans l'année suivante, le Comité Hydrographique a proposé la création d'un Sous-Comité d'experts hydrographes et biologistes. Le Comité du Plancton accepte cette idée et propose M. F. S. Russell et le Dr. Trygve Braarud comme membres biologistes de ce Sous-Comité.

III. Recommandations.

1) Le Comité du Plancton recommande que la publication des fiches planctoniques pour la détermination des espèces du zoo-plancton soit continuée.

2) Le Comité du Plancton appuie la proposition du Comité Hydrographique de constituer un Sous-Comité pour la discussion et l'organisation de recherches combinées hydrographiques et biologiques. Il propose comme membres biologistes à ce Comité M. F. S. Russell et le Dr. Trygve Braarud.

Comité du Saumon et de la Truite.

Faisant fonction de Président: Le Professeur Knut Dahl.
Réunion du 16 Octobre 1945 à 11 h. 30.

I. Compte-rendu.

1) Le Président intérimaire ouvre la séance par un petit discours à la mémoire du Professeur M. Siedlecki, que l'assemblée honore en se levant.

2) Un compte rendu des activités de recherches dans les différents pays durant la guerre est donné pour la Norvège par le Professeur Knut Dahl, pour la Suède par le Dr. Nils Rosén, pour l'Ecosse par M. J. E. de Watteville, pour le Danemark par M. C. V. Otterstrøm et pour la Finlande par le Professeur Dr. T. H. Järvi.

3) Un plan pour la coopération internationale pour le marquage du saumon dans la mer est discuté. Voir II.

4) Un traité du Professeur T. H. Järvi "Sur la Périodicité de la Reproduction du Saumon dans le Nord de la Baltique et ses Causes" est soumis au Comité, qui nomme un Sous-Comité constitué du Professeur Dahl et du Dr. Rosén pour établir directement un rapport au Comité Consultatif concernant la publication de ce traité.

5) Le Professeur Dahl est élu Président pour l'année suivante.

II. Programme de travail.

1) Une coopération internationale pour le marquage du saumon de mer est établie afin d'étudier le caractère international des migrations du saumon.

2) Le choix des endroits où apposer les marques est laissé aux pays participants.

3) Les méthodes de maniement et de marquage du saumon resteront les mêmes pour tous les pays participants.

4) Les pays intéressés emploieront la même méthode pour enregistrer les marques (voir Dahl et Sømme 1935).

5) Le Comité demande à M. Einar Lea de suggérer les différents types de marques à employer.

6) Les listes des relevés des observations de marquages seront étudiées par un Sous-Comité pour la publication d'un sommaire des résultats.

Le Sous-Comité désigné par le Comité du Saumon et de la Truite pour examiner le traité du Professeur Järvi intitulé "Sur la Périodicité de la Reproduction du Saumon dans le Nord de la Baltique et ses Causes" a lu le traité du Professeur Järvi et dit qu'à son avis ce traité peut être imprimé par le Conseil, sauf exception de pt. 3 dans le chapitre "Le Matériel". Les appendices seront imprimés. Les représentations des graphiques des niveaux de l'eau peuvent être imprimées en deux exemplaires.

Charlottenlund, 16 Octobre 1945.

(signé) Knut Dahl, Nils Rosén.

Comité de la Baleine.

Président: M. A. T. A. Dobson.

Réunion du 17 Octobre 1945 à 16 h. 00.

A la requête du Conseil, M. Dobson donne un court aperçu historique de ce qui s'est passé au sujet de la chasse à la Baleine depuis l'ouverture des hostilités. Cette industrie a eu une activité réduite en 1939—40 et 1940—41 et s'est ensuite arrêtée. Par anticipation sur l'industrie d'après guerre une Conférence internationale de la Baleine s'est tenue à Londres en Janvier 1944 et a apporté quelques modifications à l'accord international de 1937 en ce qui concerne la saison de 1945—1946 qui va commencer. Ces modifications ont été ratifiées depuis et une nouvelle conférence a été prévue pour le 20 Novembre 1945 pour s'occuper de la saison 1946—1947. Il est également dans l'intention des Etats-Unis d'organiser une Conférence internationale en 1946 pour discuter des problèmes baleiniers à longue échéance.

Dr. Ruud donne un compte rendu intéressant sur les observations scientifiques qui ont été faites en Norvège pendant les hostilités et précise qu'il se maintient en liaison avec le Dr. Mackintosh du "Comité du Discovery" au sujet du marquage des baleines.

Il est décidé que le Comité de la Baleine sera reconstitué à la prochaine réunion du Conseil en 1946.

RAPPORTS

ET

PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXVI

2ÈME PARTIE

RAPPORT ADMINISTRATIF

(1942—43, 1943—44 ET 1944—45)

REPORT

of

ADMINISTRATION

FOR THE YEARS 1942—43, 1943—44 AND 1944—45.

I. General.

In continuation of the Report of Administration for the years 1939—40, 1940—41 and 1941—42 issued in January 1943 (Rapp. et Proc.-Verb. Vol. No. 113) I beg leave to present herewith a Report of Administration covering the period from 1942 to 1945.

From the above-mentioned Report of Administration it appears (see page 11) that Delegates of all countries (except Poland) had urged the President to do his utmost to continue the work of the Council as far as conditions would permit until the Council could again meet *in pleno*. It further appears that the budget was prolonged until July 21st, 1942, which had been made possible by the extraordinary grant from the Danish Government mentioned in the above-named Report of Administration, p. 12.

As the extraordinary Contribution from Denmark had been prolonged each year and several other contributions have been received it has been possible not only to keep the Central Office going and to pay the Incidentals and honoraria to Chairmen of Committees, but even to defray, during the succeeding years, certain extraordinary grants with a view to securing Officials as well as Staff better economic circumstances.

When in July 1945 the President had had the opportunity to consult the two Vice-Presidents still alive, the Danish Foreign Office was asked to approach the Governments of the participating countries still represented by a Foreign Office with a view to nominating Delegates to the Council and to hold a meeting of the Council—if possible in the month of September.

Composition of the International Council for the Exploration of the Sea.

Communication with Delegates was increasingly hampered by war conditions, but whenever letters came through they expressed the satisfaction of the Delegates that the Central Office was still working.

The following countries were able to communicate with the Office and proved their interest in maintaining the international co-operation by paying their contributions after the expiration of the 5-year period: Denmark, Germany, Norway and Sweden paid up to July 21st, 1945, Holland and Finland up to July 21st, 1943, and France up to July 21st, 1942.

The Council has suffered the loss by death of the following Delegates:

For Norway: Mr. Oscar Sund, died October 1st, 1943.
For Belgium: Professor G. Gilson, died January 1st, 1944.
For Germany: Dr. C. Heinrici, died May 26th, 1944.
For France: M. Théodore Tissier, died October 1944.

Composition of the Bureau.

Owing to the death of the above-mentioned Delegates the composition of the Bureau—until a new Council Meeting can take place—is as follows:—Professor Dr. Johan Hjort, President, Professor Martin Knudsen and Mr. A. T. A. Dobson, Vice-Presidents. Mr. H. G. Maurice is Président d'Honneur.

Administrative Secretary.

The Council has suffered the loss of its Administrative Secretary, Captain W. Nellemose, who died on November 13th, 1944. The post of Administrative Secretary is thus vacant.

Committees.

The Committees existing at the Council Meeting in May 1939, were recorded in Rapp. et Proc.-Verb. Vol. No. 109, pp. 21—23. In addition to the above-mentioned Delegates, three of whom have been members of various Committees, the following members of Committees have died: Dr. Stanley Kemp, Professor B. Schulz, Mr. F. M. Davis, Dr. E. Fischer, and Professor L. Roule.

No attempt has been made to compile an Administrative Report from the several Committees for the years 1942, 1943 and 1944, but circular letters were distributed on April 6th, 1945, to Chairmen and Members of Committees asking them if they would be in a position to send material for an Administrative Report from their Committees covering the period since the last issue of a report from the respective Committees. Publication will take place when all reports are received.

All Chairmen of Committees have been paid their honoraria when possible—in several cases such honoraria have been retained for payment until communications could again be established and permission obtained from the Danish National Bank to transfer the amounts.

Owing to deaths the following Committees have been left without Chairmen: The North-Eastern Area Committee, the Combined North Sea and Eastern Channel Committee and the Salmon and Trout Committee.

For other reasons the following Committees are without Chairmen:

Germany not being invited to take part in the Council Meeting, the Southern North Sea Committee is without a Chairman and the North-Eastern Area Committee is without its Vice-Chairman, who was acting as Chairman. According to information received from France, Dr. Ed. le Danois is no longer Director of the Office Scientifique et Technique des Pêches Maritimes, and will no longer represent France in the Council, thus leaving also the Atlantic Committee and the Atlantic Slope Committee without a Chairman.

Meetings.

At the end of September 1942 the President and the Vice-Presidents, Dr. C. Heinrici and Professor Martin Knudsen, met at Copenhagen. In May 1943 the same personalities again held a meeting to which were also summoned Dr. K. A. Andersson and Dr. H. Blegvad. In June 1944 the President paid a visit to the Central Office. On all these occasions, and on other occasions when the President had so instructed the Administrative Secretary, circular letters were distributed to all Delegates and Chairmen of Committees informing them of the discussions held and the decisions taken. The President and Dr. K. A. Andersson visited the Central Office in June 1945. A new meeting was held in August 1945 attended by the President, the Danish Delegates, Dr. K. A. Andersson and Dr. Täning.

Audit of Accounts.

The accounts of the Council for the years 1938—39, 1939—40, 1940—41 and 1941—42 (printed in the Rapp. et Proc.-Verb. Vol. No. 113), still await the approval of the Council. Those for the years 1942—43, 1943—44 and 1944—45 are presented overleaf with the signatures of the auditors and those of the President and the Danish Delegates—permanent members of the Finance Committee.

I beg leave to present in the following the usual remarks in respect of the Statements of Accounts and Balance Sheets for the separate years:

Statement of Accounts for 1942—43 (p. 6).

With regard to Income it will be noted that annual contributions for 1941—42 include payments from Holland and Finland. These contributions were not—in view of the expiration of the 5-year period—taken up on the previous year's budget as outstanding contributions. Contributions for 1942—43 were received from Denmark, Germany and Norway. The extraordinary Danish grant of 3,500 Kr. monthly, re-voted by the Danish Government, totals Kr. 42,000. Furthermore an extraordinary contribution of 20,000 Kr. was received from Germany. The amelioration of the financial conditions manifests itself in the item "Interest" which is about 2,000 Kr. higher than the preceding year.

The expenditure column gives rise to the following remarks: Incidentals, item 1: as mentioned in the Report of Administration for 1941—42 the President's honorarium, at his own request, is retained and carried to his account among the Council's creditors and will reappear in the Balance Sheet under Sundry Creditors together with those of Editors (items 2 and 3), whose payment conditions have prevented.

Chairmen of Committees. Wherever it has been possible to remit money to Chairmen of Committees the honoraria have been paid, the Balance being carried to the account of "Sundry Creditors".

Printing covers the issues of the Report af Administration for the years 1939—40 to 1941—42 (Rapp. et Proc.-Verb. Vol. No. 113) and a publication containing four hydrographical papers (Rapp. et Proc.-Verb. Vol. No. 112).

The usual expenditure of carrying Kr. 3,500 to the Special Pension Fund Account was discontinued as from the expiration of the 5-year period.

Under Extraordinary Expenses it will be seen that a cost-of-living bonus has been paid to Officials and Staff. This was decided at the President's instigation at the meeting held in Copenhagen in May 1943, mentioned above. The Bonus represents a 25 per cent.

addition to all "Incidentals", honoraria and salaries, and here again part of the amount will reappear in the Balance Sheet under "Sundry Creditors".

From the Statement of Accounts it will be noted that Expenditure exceeds Income by Kr. 73.96.

Balance Sheet 1942—43.

Comparing this year's Balance Sheet with that of last year it will be noticed that the reserves have hardly been touched, being only Kr. 73.96 less than the foregoing year, while the Danish Treasury Bonds remain untouched.

The Pension Fund has increased from Kr. 81,286.93 to Kr. 84,997.90 from interest added to Capital.

For the convenience of the Delegates I beg leave to specify outstanding contributions mentioned in the Balance Sheet on page 7 as follows: 1939—40: Great Britain Kr. 20,000 and Latvia Kr. 5,000. 1940—41: France Kr. 20,000; Great Britain Kr. 20,000; Belgium Kr. 9,347.20; Eire Kr. 10,000; Iceland Kr. 10,000 and Latvia Kr. 5,000.

I would draw attention to the fact that in the Balance Sheet for 1940—41 the outstanding contributions due from Spain and Poland were omitted on the advice of the auditors; this line has since been followed.

Statement of Accounts for 1943—44.

These accounts are presented on pages 8—9.

With regard to Income it will be noted that annual contributions have been received from France for 1941—42 and from Finland, Holland and Sweden for 1942—43, while Denmark, Germany and Norway have paid contributions for the current year and Denmark in addition hereto the extraordinary contribution of 42,000 Kr. The Income from interest and sale of publications has declined only slightly.

As regards the Expenditure column the items 1, 3 and 4 and part of the item 15 will—as last year—reappear on the Balance Sheet as Sundry Creditors.

Printing Expenses cover the Printing of the "Annales Biologiques" No. 1, Bulletin Statistique for 1938, Bulletin Hydrographique for 1938 and 1939, and Rapp. et Proc.-Verb. Vol. No. 114, a paper by Dr. Bückmann.

Under Extraordinary Expenses will be found—in addition to the repeated payment of the 25 per cent. cost-of-living bonus similar to that paid last year—a considerable amount of extraordinary expenses: (1) Agreed at the meeting in May 1943: A personal salary of Kr. 250 monthly as from January 1st, 1944, until the end of the financial year to the Hydrographical Secretary and tacitly prolonged. This extraordinary salary was considered necessary due to the fact that a new Hydrographical Secretary, Mr. Smed, in August 1939 took over this position as a whole-time appointment at the same salary which had been paid to the former Secretary for half-day work only, and that the conditions, i. e. the strict adherence to the budget of 1939, had hitherto prevented an increase of this salary. The amount was fixed at Kr. 250 monthly due to the fact that the Hydrographical Secretary had for two years received an extra grant of this amount from the Rask-Ørsted Fund for carrying out a special task. It was especially emphasized, however, and made clear by letter from the Administrative Secretary to the Hydrographical Secretary that this additional bonus should not in any way prejudice any decision reached by the Council as to the rate of payment or engagement and that the Council should be perfectly free to decide upon the questions of his engagement as well as salary. This personal bonus was not to be looked upon as a rise in salary. (2) Decided by the President during his visit at Copenhagen in June 1944: An honorarium of Kr. 2,000 to Dr. Blegvad as Editor of the "Annales Biologiques"—a similar honorarium to be paid the following year in respect of the new edition. After-payments of Kr. 900 to the Secretarial Assistant (item 11) and of Kr. 1,200 to the Clerical Assistant (item 12) who had hitherto received quite inadequate salaries and who had been relatively less well recompensed than their colleagues by the percental cost-of-living bonus. These sums have been carried to Extraordinary Expenses in conformity with the above-mentioned personal salary pending any decision the Council may take in respect of salaries. These extraordinary salaries should also be paid the following year. A sum of Kr. 9,000 was fixed for a proof-reading of the Hydrographical Index undertaken because the Administrative Secreatry saw an opportunity of having this useful work done when the Danish Naval Officers were prevented from carrying out their duties, losing at the same time part of their income. Originally it was the intention of the Administrative Secretary to pay for this work out of his own pocket. Altogether seven officers have been employed for shorter or longer periods and the President in June 1944 took the responsibility of granting a total of Kr. 12,000, the Kr. 3,000 to be paid the following year. Further the sum of Kr. 250 monthly was fixed as an additional salary to myself for taking over the duties of the Administrative Secretary after his imprisonment by the German police at the end of February 1944.

From the Statement of Accounts it will be noted that Expenditure exceeds Income by Kr. 21,014.39, but it must be remembered that Printing and Extraordinary Expenses amount to more than Kr. 60,000.

Balance Sheet 1943—44.

Comparing this year's Balance Sheet with that of the preceding year it will be noted that the reserve has been diminished by Kr. 21,014.39, the Danish Treasury Bonds being intact.

The Pension Fund has increased from Kr. 84,997.90 to Kr. 88,805.91 from interest added to capital.

The outstanding contributions have been diminished by Kr. 20,000, France having paid her contributions for 1940—41.

Income and Expenditure Account for the year ending July 21st, 1943.

EXPENDITURE

	I. Incidentals		
1	President	6,000.00	
2	Hydrographical Consultant	3,000.00	
3	Editor of Statistics	2,000.00	
4	Editor of the Journal	3,000.00	
			14,000.00
	II. Headquarter Staff		
5	Administrative Secretary	12,000.00	
6	Hydrographer	3,000.00	
			15,000.00
7	1st Assistant Secretary	6,000.00	
8	2nd Assistant Secretary	5,000.00	
9	Statistical Secretary	4,800.00	
10	Hydrographical Secretary	3,000.00	
11	Secretarial Assistant	2,700.00	
12	Clerical Assistance	3,170.42	
			24,670.42
	III. Office Expenses		
13a	Rent	5,580.00	
b	Heating and light	1,093.03	
c	Stationery, books etc.	1,001.86	
d	Telephone, postage etc.	787.60	
e	Furniture and fittings	40.50	
f	Insurance	458.41	
g	Upkeep, cleaning etc.	1,937.60	
h	Miscellaneous	894.29	
			11,793.29
14	**IV. Travelling Expenses**		2,762.55
15	**V. Chairmen of Committees**		29,000.00
16	**VI. Printing and Distribution**		
a	Printing	6,192.75	
b	Drawings, translations	178.00	
c	Distribution	213.63	6,584.38
	Ordinary Expenditure		103,810.64
	VII. Extraordinary Expenditure		
17	Cost of living Bonus to Officials and Staff		20,400.00
		Kr.	124,210.64

INCOME

	I. a. Annual Contributions for 1941—42		
	Holland	10,000.76	
	Finland	5,000.00	
			15,000.76
	b. Annual Contributions for 1942—43		
	Germany	20,000.00	
	Denmark	10,000.00	
	Norway	10,000.00	
			40,000.00
	c. Extraordinary Contributions		
	Denmark from $^{1}/_{8}$ 1942—$^{31}/_{7}$ 1943.	42,000.00	
	Germany	20,000.00	
			62,000.00
	II. Interests		
	On Bank Deposits	1,183.40	
	On Investments	5,314.35	
			6,497.75
	III. Sale of Publications		638.17
	Excess of Expenditure over Income		73.96
		Kr.	124,210.64

Statement of Accounts for 1944—45.

These accounts are presented on pages 10—11.

With regard to Income it will be noted that the Swedish contribution for 1943—44 was received, and for 1944—45 contributions were received from Denmark, Germany, Norway and Sweden. The usual extraordinary Contribution from Denmark of Kr. 42,000 was also received.

Expenditure. Honoraria which it was not possible to remit have been considerably augmented due to circumstances. These amounts which had hitherto been entered on special accounts in the books were—at the desire of the Danish Delegates—transferred to a special pass-book in the bank as from July 22nd, 1944.

In respect of Headquarter Staff, item 5, Administrative Secretary, the President decided—in consultation with the Danish Delegates—that Captain Nellemose's full salary should be paid to his widow for six months after his death.

Printing covers an issue of the Rapp. et Proc.-Verb. Vol. No. 115 containing one paper by the President on the International Council and another paper by M. Henry Baels on the International Convention of 1937.

Extraordinary Expenses. (1) the honorarium of Kr. 2,000 to the Editor of the "Annales Biologiques", the Kr. 3,000 for proof-reading of the Hydrographical Index, and the extraordinary salaries fixed in May 1944 figure again in this year's accounts with the addition that Kr. 200 was extraordinarily added to the Statistical Secretary's salary and 10 per cent.

Statement of Pension Fund Accounts 1942—43.

EXPENDITURE			INCOME		
Balance as per July 21st, 1943		84,997.90	Balance as per July 22nd, 1942		81,286.93
			Interests:		
			On Bank Deposits	46.73	
			On Investments	3,664.24	
					3,710.97
		Kr. 84,997.90			Kr. 84,997.90

Balance Sheet 21st July, 1943.

LIABILITIES			ASSETS		
Capital Reserve:			Cash at Handelsbanken	83,040.62	
Balance as per July 22nd, 1942	260,061.85		Cash at Ordrup Charlottenlund Bank	3,901.69	
less Excess of Expenditure over Income	73.96		Cash in hand	7,860.74	
		259,987.89			94,803.05
Pension Fund		84,997.90	Danish Treasury Bonds as per July 21st, 1943, Nom. Value Kr. 120,000 (Market Value on July 21st, 1943, Kr. 119,696.25)		119,079.26
Total Funds		344,985.79			
			Pension Fund:		
Sundry Creditors as per July 21st, 1943:			Cash at bankers	2,550.23	
President, Editors and Chairmen of Committees	54,750.00		Debtors (Interests per July 21st, 1943)	1,257.74	
Sundry Creditors	243.57		Treasury Bonds, Nom. Value Kr. 81,400 (Market Value on July 21st, 1943: Kr. 82,010.50)	81,189.93	
		54,993.57			84,997.90
			Sundry Debtors as per July 21st, 1943:		
			Contributions from 1939—40	24,999.42[1])	
			Contributions from 1940—41	74,346.63[1])	
			Interests per July 21st, 1943	1,686.90	
			Sundry Debtors	66.20	
					101,099.15
		Kr. 399,979.36			Kr. 399,979.36

[1] Outstanding Contributions from Spain 1938—41 (Kr. 60,000.—) and those from Poland 1939—41 (Kr. 20,000.—) not included.

(sign.) W. Nellemose.

We have scrutinized the foregoing Balance Sheet and are satisfied that it is correct.

(sign.) Martin Knudsen. H. Blegvad.

Johan Hjort.

We have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. We have verified the existence of the cash in hand and at bankers as well as of the Treasury Bonds.

Copenhagen, 23rd August, 1943.

Revisions- og Forvaltnings-Institutet
Aktieselskab

(sign.) J. Ejlersen
State-Certified Auditor,

(sign.) Karl Sørensen
State-Certified Auditor.

Income and Expenditure Account for the year ending July 21st, 1944.

EXPENDITURE

	I. Incidentals		
1	President	6,000.00	
2	Hydrographical Consultant	3,000.00	
3	Editor of Statistics	2,000.00	
4	Editor of the Journal	3,000.00	
			14,000.00
	II. Headquarter Staff		
5	Administrative Secretary	12,000.00	
6	Hydrographer	3,000.00	
			15,000.00
7	1st Assistant Secretary	6,000.00	
8	2nd Assistant Secretary	5,000.00	
9	Statistical Secretary	4,800.00	
10	Hydrographical Secretary	3,000.00	
11	Secretarial Assistant	2,700.00	
12	Clerical Assistance	2,836.52	
			24,336.52
	III. Office Expenses		
13a	Rent	5,580.00	
l	Heating and Light	1,126.36	
c	Stationery, books etc.	1,107.15	
d	Telephone, postage etc.	724.24	
f	Insurance	488.26	
g	Upkeep, Cleaning etc.	2,181.53	
h	Miscellaneous	843.88	
			12,051.42
14	**IV. Travelling Expenses**		1,354.03
15	**V. Chairmen of Committees**		28,000.00
16	**VI. Printing and Distribution**		
a	Printing	23,237.46	
b	Drawings, translations etc.	1,003.50	
c	Distribution	58.50	24,299.46
	Ordinary Expenditure		119,041.43
	VII. Extraordinary Expenditure		
17	Cost of living Bonus to Officials and Staff for 1943—44[1])	20,400.00	
18	Personal Salary to Hyd. Secretary as from $^1/_1$ 1944[1])	1,672.50	
19	Editing of "Annales Biologiques" I, Dr. H. Blegvad[2])	2,000.00	
20	Extraordinary Salary to Secretarial and Clerical Assistant for the year 1943—44[2])	2,100.00	
21	Revision of Hydrographic Index[2])	9,000.00	
22	Additional Salary to 1st Assistant Secretary as Acting Administrative Secretary as from $^{21}/_3$ 1944[2])	1,000.00	36,172.50
		Kr.	155,213.93

[1]) Voted May 1943.
[2]) Voted June 1944.

INCOME

	I. a. Annual Contribution for 1941—42		
	France		20,000.00
	b. Annual Contributions for 1942—43		
	Sweden	10,000.00	
	Holland	10,000.75	
	Finland	5,000.00	
			25,000.75
	c. Annual Contributions for 1943—44		
	Germany	20,000.00	
	Denmark	10,000.00	
	Norway	10,000.00	
			40,000.00
	d. Extraordinary Contribution		
	Denmark: $^1/_8$ 1943—$^{31}/_7$ 1944		42,000.00
	II. Interests		
	On Bank Deposits	1,525.21	
	On Investments	5,358.75	
			6,883.96
	III. Sale of Publications		314.83
	Excess of Expenditure over Income		21,014.39
		Kr.	155,213.93

added to the salary of the 2nd Assistant Secretary as well as to the increased salaries of the Statistical and the Hydrographical Secretaries, on the same conditions, namely that these additions should not prejudice the Council's decisions. (2) The President, feeling more and more uncertain about the arrival of letters, instructed me—in January 1945—to pay to the Vice-President, Professor Martin Knudsen, the sum of Kr. 3,000 annually as from July 22nd, 1944, for acting as Vice-President. (3) During his visit here in June 1945 the President in consultation with the Danish Delegates and Dr. K. A. Andersson decided

Statement of Pension Fund Accounts 1943—44.

EXPENDITURE			INCOME		
Balance as per July 21st, 1944		88,805.91	Balance as per July 22nd, 1943		84,997.90
			Interests:		
			On Bank Deposits	48.03	
			On Investments	3,759.98	
					3,808.01
		Kr. 88,805.91			Kr. 88,805.91

Balance Sheet July 21st, 1944.

LIABILITIES			ASSETS		
Capital Reserve:			Cash at Handelsbanken	96,208.95	
Balance as per July 22nd, 1943.	259,987.89		Cash at Ordrup-Charlottenlund Bank	119.09	
less Excess of Expenditure over Income	21,014.39		Cash at Postgiro	25,240.24	
		238,973.50	Cash in hand	7,303.78	
					128,872.06
Pension Fund		88,805.91	Danish Treasury Bond as per July 21st, 1944. Nom. Value Kr. 123,000.00 (Market value on July 21st, 1944: Kr. 126,048.75)		120,958.14
Total Funds		327,779.41			
Sundry Creditors as per July 21st, 1944:			Pension Fund:		
President, Editors and Chairmen of Committees	75,976.30		Cash at bankers	745.26	
Sundry Creditors (Especially Printing)	15,903.17		Debtors (Interests per July 21st, 1944)	1,265.37	
		91,879.47	Danish Treasury Bonds, nom. Val. Kr. 88,900. (Market Value on July 21st, 1944: Kr. 90,491.50)	86,795.28	
					88,805.91
			Sundry Debtors as per July 21st, 1944[1]):		
			Contributions for 1939—40	24,999.42	
			Contributions for 1940—41	54,346.63	
			Interests per July 21st, 1944	1,610.52	
			Sundry Debtors	66.20	
					81.022.77
		Kr. 419,658.88			Kr. 419,658.88

[1]) Outstanding Contributions from Spain and Poland not included.

(sign.) E. Brønniche.

We have scrutinized the foregoing Balance Sheet and are satisfied that it is correct.

(sign.) Martin Knudsen. H. Blegvad.

Johan Hjort.

We have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. We have verified the existence of the cash in hand and at bankers as well as of the Treasury Bonds.

Copenhagen, August 18th, 1944.

Revisions- og Forvaltnings-Institutet Aktieselskab.

(sign.) J. Ejlersen
State-Certified Auditor.

(sign.) Karl Sørensen
State-Certified Auditor.

Income and Expenditure Account for the year ending July 21st, 1945.

EXPENDITURE

	I. Incidentals		
1	President	6,000.00	
2	Hydrographical Consultant	3,000.00	
3	Editor of Statistics	2,000.00	
4	Editor of the Journal	3,000.00	
			14,000.00
	II. Headquarter Staff		
5	Administrative Secretary	10,000.00	
6	Hydrographer	3,000.00	
			13,000.00
7	1st Assistant Secretary	6,000.00	
8	2nd Assistant Secretary	5,000.00	
9	Statistical Secretary	4,800.00	
10	Hydrographical Secretary	3,000.00	
11	Secretarial Assistant	2,700.00	
12	Clerical Assistant	2,100.00	
			23,600.00
	III. Office Expenses		
13a	Rent	5,580.00	
b	Heating and light	1,131.60	
c	Stationery, books etc.	707.37	
d	Telephone, postage etc.	886.98	
e	Furniture and fittings	276.10	
f	Insurance	1,296.71	
g	Upkeep, cleaning etc.	2,193.03	
h	Miscellaneous	775.69	
			12,847.48
14	**IV. Travelling Expenses**		1,086.52
15	**V. Chairmen of Committees**		27,000.00
16	**VI. Printing and Distribution**		
a	Printing	5,588.99	
b	Drawings, translations	927.78	
c	Distribution	218.83	6,735.60
	Ordinary Expenditure		98,269.60
	VII. Extraordinary Expenditure		
17	Personal salary to Hydrogr. Secr.[1])	3,000.00	
18	Editing of "Annales Biologiques" II, H. Blegvad[2])	2,000.00	
19	Extraordinary salary to Clerical Assistants 1944—45[2])	2,100.00	
20	Revision of Hydrographic Index[2])	3,000.00	
21	Additional salary to 1st Ass. Secr. as acting Adm. Secr.[2])	3,000.00	
22	Additional salary to Statistical Secr.	200.00	
23	10% to total salaries of 2nd Ass. Secr., Stat. and Hydr. Secr.[2])	1,600.00	
24	Honorarium to Prof. Knudsen as acting Vice-President[3])	3,000.00	
			17,900.00
25	Cost of living Bonus, 10% to Officials and Staff, act. Adm. Secr.s extra salary excluded[4])		7,950.00
	Total Expenditure		**Kr.** 124,119.60

INCOME

	I. a. Annual Contributions for 1943—44		
	Sweden		10,000.00
	b. Annual Contributions for 1944—45		
	Denmark	10,000.00	
	Germany	20,000.00	
	Norway	10,000.00	
	Sweden	10,000.00	
			50,000.00
	c. Extraordinary Contributions		
	Denmark 1/8 1944—31/7 1945		42,000.00
	II. Interests		
	On Bank Deposits	574.31	
	On Investments	5,317.50	
			5,891.81
	III. Sale of Publications		938.66
	Excess of Expenditure over Income		15,289.13
			Kr. 124,119.60

[1]) Voted May 1943.
[2]) Voted June 1944.
[3]) According to President's letter dated January 3rd, 1945.
[4]) Voted June 1945.

Statement of Pension Fund Accounts 1944—45.

EXPENDITURE		INCOME		
Balance as per July 22nd, 1945	92,786.44	Balance as per July 22nd, 1944		88,805.91
		Interests:		
		On Bank Deposits	10.49	
		On Investments	3,970.04	
				3,980.53
	Kr. 92,786.44			Kr. 92,786.44

Balance Sheet July 21st, 1945.

LIABILITIES			ASSETS		
Capital Reserve:			Cash at Handelsbanken	29,534.54	
Balance as per July 22nd, 1944.	238,973.50		Cash at Handelsb. Special Account.	100,825.98	
less Excess of Expenditure over Income	15,289.13		Cash at Ordrup Charlottenlund Bank	533.89	
		223,684.37	Cash at Postgiro	9,919.07	
			Cash in hand	426.29	
					141,239.77
Pension Fund		92,786.44	Danish Treasury Bonds as per July 21st, 1945. Nominal Value Kr. 111,000 (Market Value on July 20th[1]) Kr. 115,223.75)		108,958.14
Total Funds...		316,470.81			
Sundry Creditors as per July 21st, 1945:			Pension Fund:		
President. Editors and Chairmen of Committees	100,838.76		Cash at bankers	594.56	
Sundry Creditors (esp. Printing)	6,327.82		Debtors (Interests per July 21st, 1945)	1,326.01	
		107,166.58	Treasury Bonds (Nominal Value Kr. 92,900) (Market Value on July 20th[1]) Kr. 95,684)	90,865.87	
					92,786.44
			Sundry Debtors as per July 21st, 1945[2]):		
			Contributions for 1939—40	24,999.42	
			Contributions for 1940—41	54,346.63	
			Interests per July 21st, 1945	1,228.01	
			Sundry Debtors	78.98	
					80,653.04
	Kr.	423,637.39		Kr.	423,637.39

[1]) Outstanding Contributions from Spain and Poland not included.
[2]) The Stock Exchange was not open from July 21st—27th, 1945.

(sign. E. Brønniche).

We have scrutinized the foregoing Balance Sheet and are satisfied that it is correct.

(sign.) Martin Knudsen. H. Blegvad.

Johan Hjort.

We have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. We have verified the existence of the cash in hand and at bankers as well as of the Treasury Bonds.

Copenhagen, September 3rd, 1945.

Revisions- og Forvaltnings-Institutet Aktieselskab.

(sign.) J. Ejlersen. State-Certified Auditor.

(sign.) Karl Sørensen. State-Certified Auditor.

to pay a new cost-of-living bonus of 10 per cent. to all Officials and to the Staff for the year 1944—45. This bonus was added to all ordinary and extraordinary honoraria and salaries except, at my own desire, the extraordinary one paid to me as acting Administrative Secretary.

As will be noted Expenditure exceeds Income by Kr. 15,289.13.

Balance Sheet 1944—45.

The reserve has been diminished by Kr. 15,289.13 to Kr. 223,684.37—a capital reserve which still exceeds the reserve in hand on March 30th, 1940, by about Kr. 13,600. Of the Kr. 120,000 Danish Treasury Bonds the Kr. 9,000 have been drawn in the course of the year and no new bonds bought, partly for the purpose of keeping a little more liquid money and partly because most of these Bonds have been drawn as recently as July 1st, 1945.

None of the outstanding contributions have been received this year.

The Pension Fund is now Kr. 92,786.44 as against Kr. 88.805.91 the preceding year.

According to a new Danish Act I have handed in to the Danish authorities a Statement of the Council's properties as per July 23rd, 1945.

For the convenience of the Delegates I give below a survey of the Statements of Accounts for all the years since the budget of 1939—40.

In respect of Income I have given in Table 1 the Contributions only for the years from 1939—40 to 1944—45. Each contribution is entered for the year which it covers, no regard being taken to the date of payment. See below.

In respect of Expenditures these may be divided into (1) standing expenses as I, Incidentals, II, Headquarter Staff and V, Chairmen of Committees, and (2) variable expenses as III, Office Expenses, IV, Travelling Expenses, VI, Printing and VII, Extraordinary Expenses. In Table 2a given on p. 13 the first column contains the budget for 1939—40 and the following columns the expenses from all the following Statements of Accounts omitting, however, for practical reasons the shortened one for the period April 1st, 1941, to July 21st, 1941, the date of the expiration of the 5-year period. (In order to facilitate a comparison between standing and variable expenses I have rearranged the sequence of the items. Moreover I have collected within each group of items such expenses not liable to changes during the years keeping only those subject to changes as separate figures.)

With regard to the varying items I have the following comments to make:

Item I, 4. Provision had been made for Assistance to the Editor of the Journal for a complete year while the first instalment was due on July 21st only, so that payment was due for three quarters instead of four.

Item II, 5—6. The decrease in 1944—45 of Kr. 2,000 is due to the fact that payment of the Administrative Secretary's honorarium came to an end on May 21st.

Item II, 10. The decrease in 1940—41 is due to the fact that the Hydrographical Department was without a Secretary for a short while.

Item II, 12. The progressive decrease is due to the successive retirement of the younger assistants, who were not substituted by others.

Table 1. Contributions received for the periods 1939/40—1944/45.

	1939/40	1940/41	1941/42	1942/43	1943/44	1944/45	Contributions not paid
France	20,000.00	20,000.00	20,000.00	—	—	—	60,000.00
Germany	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	—
			+ 20,000.00	+ 20,000.00			
Great Britain	—	—	—	—	—	—	120,000.00
Spain[1]	—	—	—	—	—	—	—[1]
Belgium	10,000.00	652.80	—	—	—	—	40,347.20
Denmark	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	—
			+ 56,000.00	+ 42,000.00	+ 42,000.00	+ 42,000.00	—
Holland	10,000.00	10,000.00	10,000.00	10,000.00	—	—	20,000.00
Iceland	10,000.00	—	—	—	—	—	50,000.00
Norway	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	—
Poland[1]	—	—	—	—	—	—	—[1]
Sweden	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	—
Eire	10,000.00	—	—	—	—	—	50,000.00
Finland	5,000.00	5,000.00	5,000.00	5,000.00	—	—	10,000.00
Latvia	—	—	—	—	—	—	10,000.00[2]
Portugal	5,000.00	5,000.00	withdrawn	—	—	—	—

[1]) These amounts were already written off in the accounts for 1939/40.
[2]) Latvia ought perhaps to be treated analogically with Spain and Poland.

Table 2a. Expenditure.

	Budget 1939—40	1/4 1939—31/3 1940	1/4 1940—31/3 1941	22/7 1941—21/7 1942	22/7 1942—21/7 1943	22/7 1943—21/7 1944	22/7 1944—21/7 1945
I. Incidentals:							
1—3	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00	11,000.00
4	4,000.00	3,750.00	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
II. Headquarter Staff:							
5	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	10,000.00
6—9, 11	21,500.00	21,500.00	21,500.00	21,500.00	21,500.00	21,500.00	21,500.00
10	3,000.00	2,375.00	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
12	6,000.00	5,575.00	5,100.00	4,333.33	3,170.42	2,836.52	2,100.00
V. Chairmen of Committees:							
15	31,000.00	29,003.71	29,000.00	29,000.00	29,000.00	28,000.00	27,000.00
	88,500.00	85,203.71	84,600.00	83,833.33	82,670.42	81,336.52	77,600.00
III. Office Expenses:							
13a Rent	16,000.00	5,580.00	5,580.00	5,580.00	5,580.00	5,580.00	5,580.00
b Heating and Light		1,238.76	1,081.76	1,081.14	1,093.03	1,126.36	1,131.60
c Stationery, etc.		3,758.14	1,059.84	575.99	1,001.86	1,107.15	707.37
d Telephone, Telegr. Postage		1,392.33	760.32	797.39	787.60	724.24	886.98
e Furniture and Fittings		215.00	—	—	40.50	—	276.10
f Insurance		484.96	405.10	460.91	458.41	488.26	1,296.71
g Upkeep, Cleaning, etc.		1,806.16	1,965.94	1,713.24	1,937.60	2,181.53	2,193.03
h Miscellaneous		1,048.37	909.09	896.63	894.29	843.88	775.69
IV. Travelling Expenses:							
14	14,000.00	3,845.34	392.04	318.00	2,762.55	1,354.03	1,086.52
VI. Printing and Distribution:							
16	41,000.00	31,060.10	93.29	1,436.01	6,584.38	24,299.46	6,735.60
Ordinary Expenditure	159,500.00	135,632.87	96,847.38	96,692.64	103,810.64	119,041.43	98,269.60
VII. Extraordinary Expenditure	6,642.71	7,255.21	—	—	20,400.00	36,172.50	25,850.00
VIII. Pension Fund:							
20	3,500.00	3,500.00	3,500.00	—	—	—	—
21	6,500.00	6,500.00	541.66	—	—	—	—
	176,142.71	152,888.08	100,889.04	96,692.64	124,210.64	155,213.93	124,119.60

Table 2b.

Epitome of Table 2a with the addition of the real Income for the years in question whether arising from that year or from a foregoing one.

	I, II, V	III, IV, VI	VII, VIII	Total Expenditure	Real Income
Budget 1939—40	88,500.00	71,000.00	16,642.71	176,142.71	—
1/4 1939—31/3 1940	85,203.71	50,429.16	17,255.21	152,888.08	153,573.57
1/4 1940—31/3 1941	84,600.00	12,247.38	4,041.66	100,889.04	37,802.40
1/4 1941—21/7 1941	33,544.44	2,733.57	—	36,278.01	30,707.70
22/7 1941—21/7 1942	83,833.33	12,859.31	—	96,692.64	156,263.13
22/7 1942—21/7 1943	82,670.42	21,140.22	20,400.00	124,210.64	148,822.56
22/7 1943—21/7 1944	81,336.52	37,704.91	36,172.50	155,213.93	154,275.92
22/7 1944—31/7 1945	77,600.00	20,669.60	25,850.00	124,119.60	109,212.98

Item V, 15. The decreases are due to the deaths of the Chairmen of the Salmon and Trout Committee and of the Combined North Sea and Eastern Channel Committee. The death of the Chairman of the North-Eastern Area Committee has caused no decrease, as the President decided that his honorarium should be paid to Mr. ROLLEFSEN who carried on the work of the late Chairman.

Item III, 13 shows that the savings obtained here are generally due to the item Stationery etc., which has for the last 5 years amounted to an average of Kr. 890 as against Kr. 3,758 in 1939—40. "Telephone, telegrams and postage" also show a considerable saving. Upkeep has been increased due to higher wages to charwomen. The increase of more than Kr. 800 on the item "Insurance" is due to the war-insurance ordained by law which, however, is paid on account only and up to the year 1943 only. The preliminary premium for 1944 has already been paid with Kr. 2,250 in the new budget.

In respect of items IV, VI and VII I would refer to remarks made hereupon in each separate treatment of the Statements of Accounts. As regards Printing I would also refer to the "Report regarding Cost of Publications issued during the period 1940 to 1945" on this page. The discontinuation of the payment of pension was due to the death of Mrs. DRECHSEL.

II. Work at the Central Office in Copenhagen.

At the end of February 1944 the Administrative Secretary, Captain W. NELLEMOSE, was imprisoned by the German police. Having been informed hereof the President charged me, in my capacity of 1st Assistant Secretary, with the Administrative Secretary's duties with the exception that the Hydrographical Consultant was to take charge of the Hydrographical Department as Chef de Service Hydrographique. After the death of Captain NELLEMOSE the President confirmed his decision.

Accounts and Correspondence.

The routine work has been carried out as far as circumstances would permit. In addition to book-keeping, correspondence and filing, assistance has been given to proof-reading etc. (see also the Report of the Hydrographical Department).

Publication and Library.

In this Office which is in charge of the 2nd Assistant Secretary no junior assistant has been employed since April 21st, 1943.

As mentioned in the Administrative Report for 1941—42 the publication of all arrears was permitted by the President due to the satisfactory financial position. The last Report regarding cost of publications will be found in Rapp. and Proc.-Verb. Vol. No. 113 on p. 6 and covers the financial year 1939—40. It has not been considered of any practical purpose to publish similar reports for the years 1940—41 and 1941—42, but below a Report for all the years 1940—41 to 1944—45 will be found. In this is inserted also the date of publication. The publications issued in 1943 were distributed as far as conditions would permit, parcels to addressees to whom it has not been possible to send the publications are lying ready at the office for despatch. Publications finished in 1944 have been sent to the Scandinavian countries only.

A new volume of the "Annales Biologiques" is contemplated. The Editor, Dr. BLEGVAD, has asked the various chairmen for their contributions, but it has been decided to await discussions of the Volume 1 at the Council Meeting before printing Volume 2.

The publication of Plankton Sheets recommended by the Plankton Committee and adopted by the

Report regarding Cost of Publications issued during the period 1941—1945.

Series	Year	Volume	Pages	Subject	Cost
Rapp. & Procès-Verbaux	1943	CXII	94	Hydrography — 4 papers	5,017.60
—	—	CXIII	51	Rapport Administratif, 1939—1942	1,958.21
—	1944	CXIV	42	Schollenbevölkerung der Helgoländer Bucht	1,793.74
—	1945	CXV	51	Conseil — Convention de Londres (3 separate Volumes in three languages)	4,937.25
Bulletins	1944		49	Bulletin Statistique, 1938	2,164.00
—	—		212	Bulletin Hydrographique, 1938 & 1939	12,863.73
Annales Biologiques	1943	I	190	Annales Biologiques	8,036.58
				Miscellaneous	280.00
					37,051.11
				Translations etc.	2,604.28
				Distribution	508.56
				Total...	40,163.95

Council at its Meeting in 1939 (see Rapp. et Proc.-Verb. Vol. No. 109, p. 16, 2nd column at bottom) has been commenced, six sheets being ready in proof-print and three manuscripts ready for composition.

Books and Periodicals for the Library have been received practically only from the Scandinavian countries. The work on indexing the Library has been continued, but owing to the absence of an assistant and to the increased amount of work with the publications it has progressed only slowly and has not yet been brought up to date. Having learned that quite independantly a similar work has been taken up during the war in the Danish Departments at Charlottenlund Slot I have had a conversation with the gentleman engaged by the Danish Government to conduct this work and have found that it has followed exactly the same lines as that started here by Captain NELLEMOSE. I propose to follow the developments and try to find out whether it would be useful for the Council to arrange the index of the Council's Library in co-ordination with those of the several Danish Departments.

The work on the catalogue of Fish Names (see Rapp. & Proc.-Verb. Vol. No. 113, p. 10, 2nd column and p. 11, 2nd column) was carried on privately by Captain NELLEMOSE and after his grant from the Rask-Ørsted Fund was exhausted by his own private means. After Captain NELLEMOSE's death Mrs. NELLEMOSE asked Dr. TÅNING if he thought this work could be carried to some conclusion, declaring at the same time her willingness to contribute half of her husband's salary as long as she was in receipt of this. Dr. EINARSSON was engaged to take charge of this work, but unfortunately was obliged to leave Copenhagen to take over a post in Iceland. In response to an application by Dr. TÅNING and Dr. BLEGVAD the Rask-Ørsted Fund has once again granted a sum for this work. At present discussions are proceeding with another scientist with regard to this work.

Statistical Department.

Since June 1944 the Statistical Secretary has received half assistance only from the Secretarial Assistant, as she is now working half time in the Hydrographical Department.

The main part of the material for the Bulletin Statistique for 1938 was received so that the Bulletin could be compiled and ultimately issued in April 1944.

As recommended at the Meeting in Berlin in May 1939 the revision of the statistics for the years 1906—1938 regarding the species of fish and the various fishing areas has been carried out; the proportion of each kind of fish and each country concerned has also been worked up.

The compilation of the Bulletin for 1939 has been put in hand, but so far very little material has been received and from some countries it will hardly be possible to get any information.

E. BRØNNICHE
Acting Administrative Secretary.

Service Hydrographique 1939—45.

During the years 1939—45 the staff of the Service Hydrographique has consisted of the following members:—

Captain W. NELLEMOSE, who in 1932 was appointed Administrative Secretary of the Bureau and soon after his appointment took over part of the work in the Service Hydrographique.

J. P. JACOBSEN, Ph. D., who in 1928 was appointed Hydrographer to the Council.

JENS SMED, M. Sc., who in 1939 was appointed Hydrographical Secretary.

Various Women Clerks, who at various periods have held appointments in the Service Hydrographique in accordance with the Administrative Secretary's directions. It may be reckoned that on an average the assistance given has been equivalent to that of a clerk with about $4^1/_2$ working hours daily.

Professor M. KNUDSEN, Ph. D., who since 1944 has been Head of the Service Hydrographique.

As in the immediately preceding years the work in the Service Hydrographique has been divided between Captain W. NELLEMOSE and Dr. J. P. JACOBSEN. Captain NELLEMOSE has been in charge of the technical part of the compilation and preparation for printing of the hydrographical material received. In this work Dr. JACOBSEN has assisted when requested by Captain NELLEMOSE. Dr. JACOBSEN has been in charge of the scientific work within the department. Mr. SMED has performed the daily work in connection with the treatment of the material received and has collaborated in the scientific work, both by assisting Dr. JACOBSEN and independently.

The following works have been carried out in the Service Hydrographique during the years 1939—45:

Bulletin Hydrographique for the years 1938 and 1939. Hydrographical material from the years 1938 and 1939 submitted to the Service Hydrographique from the countries associated with the Council and from Esthonia and the U. S. A. has been worked up in tables and graphic representations and published in the Bulletin for 1938 and 1939. The arrangement of the material in this Bulletin is similar to that in the immediately preceding ones. Material received which has been printed elsewhere has not been included, but in the Bulletin there are references to the publications in which such material has been printed.

The material includes observations of temperature, salinity, the amount of free oxygen, nitrate and nitrite nitrogen and phosphate phosphorus, alkalinity, and the hydrogen ion concentration.

Graphic representations of the temperature along the shipping routes Bergen-Thorshavn-Vestmanna Islands, Bergen-Faskrudsfjord, Stavanger-Newcastle, and Stavanger-Rotterdam have been published in the Bulletin on the basis of the registration of the surface temperature of the sea by thermographs established in Norwegian ships.

The Bulletin also includes the hydrographical material from the Baltic Expedition of 1939, the

members of which were Sweden, Finland, Latvia, and Germany. As an appendix to the Bulletin was published the hydrographical material from the Gulf Stream Expedition of 1938, the members of which were Denmark, Norway, Germany, France, Scotland, and Iceland, each with one ship, and the U. S. A. with two ships. The material from the Gulf Stream Expedition is arranged according to countries and for each country according to routes and sections.

"Off-prints". As in the immediately preceding years the material received has been arranged according to shipping routes—including the routes of the expedition ships—and copied on transparent paper so that contact copies of the material in this form may be made available to those interested.

Working-up of thermographical material. Thermogrammes from the above-mentioned shipping-routes have been received from Norway. From the years 1938 and 1939 there are thermogrammes from 227 double voyages in all. The thermogrammes have been drawn in a rectangular coordinate system with the distance from the place of departure as abscissa, and have been transferred to tracing-cloth, a total of 44 leaves.

Contact copies may be taken from the thermogrammes transferred to tracing-cloth, and be placed at the disposal of those interested.

Assistance at the revision of the Card-Index of Hydrographical Observations. For the Card-Index of Hydrographical Observations arranged by Captain W. Nellemose, Mr. Smed has written a report appended to the present account of the work in the Service Hydrographique. At the revision of the card-index in 1943—45 Mr. Smed assisted by giving information and guidance of various kinds.

It may be added that the Icelandic Government recently asked for copies of some of the cards. As the Service Hydrographique had not sufficient personnel to do the copying it advised the questioner to ask the acting Administrative Secretary to undertake the work in her department. This work is now in progress.

Examination and rearrangement of archival material. This work was undertaken in connexion with the revision of the card-index prepared by Captain W. Nellemose. The greater part of the Norwegian thermographical material collected during the years 1931—39 is found in the archives of the Council. A number of the original thermogrammes, thus all of those dating from 1937, have been returned to Norway. Lists of the various voyages and the places where the thermogrammes in question are to be found have been prepared.

Scientific working-up of hydrographical material. In connexion with the plans for Combined Hydrographical and Biological Investigations in the Faroe-Shetland Channel (see Rapp. et Proc.-Verb. Vol. 109, I, p. 25 pt. 3 and p. 43) Dr. Jacobsen prepared a preliminary survey of hydrographical conditions in the Faroe-Shetland Channel. This survey was submitted to the relevant Sub-committee at a meeting in Paris in February 1939 by Professor M. Knudsen, Chairman of the Committee. In the minutes of this meeting (see Rapp. et Proc.-Verb. Vol. 109, II, p. 65) it is stated concerning this survey that "The Committee thinks it important that this work should be completed as soon as possible."

After his return from America in the autumn of 1939 Dr. Jacobsen, assisted by Mr. Smed, started investigating the hydrographical conditions in the Faroe-Shetland Channel on the basis of the material available. A paper by Dr. Jacobsen entitled "The Atlantic Current through the Faroe-Shetland Channel and its Influence on the Hydrographical Conditions in the Northern Part of the North Sea, the Norwegian Sea and the Barents Sea", was published in 1943 in the Rapp. et Proc.-Verb. Vol. 112. From the results obtained it may be assumed that the Atlantic water transported through the Faroe-Shetland Channel is of minor importance as bearer of the amounts of heat that have asserted themselves in the milder winters in the arctic regions during recent years. The amounts of heat in question must be assumed to have chiefly been carried to the arctic regions through the circulation in the atmosphere.

In connexion with the question of the transport of Atlantic water through the Faroe-Shetland Channel Mr. Smed has investigated the variation of the surface salinity in the North Atlantic from the years 1902—17 to the years 1919—39 and the seasonal variation of the surface salinity.

Among the results obtained it may be emphasized that in the North-Eastern Atlantic, from the first to the last of the periods mentioned, there has been an increase in the surface salinity ($^0/_{00}$) of about 0.1. It may be considered probable that this increase has arisen from increased evaporation. Mr. Smed's paper is entitled "Annual and Seasonal Variations in the Salinity of the North Atlantic Surface Water" and was published in 1943 in the Rapp. et Proc.-Verb. Vol. 112.

The flow of Atlantic water into the Norwegian Sea must to some degree be supposed to take place in the area between the Faroes and Iceland. Based on the rather scant material available Mr. Smed has by means of dynamic calculations subjected this question to preliminary treatment.

It is to be supposed that the movement of water between Iceland and the Faroes takes place chiefly along the ridge and that part of the volume of water is deflected north of the Faroes. The intensity of the flow of water north of the Faroes may perhaps be estimated at about one third of the intensity of the flow of water through the Faroe-Shetland Channel.

With a view to an investigation of the inflow and outflow of water into and out of the North Sea and of the mixing of the water masses in this area, Mr. Smed has taken up for treatment the question of the circulation of water in the Northern part of the North Sea. One part of this work, viz., a discussion of the supply of Atlantic water to the northern North Sea, has been brought to a preliminary conclusion.

It has proved that the intensity of the flow through the channel between the Orkneys and the Shetland Islands must be supposed to be of the same order of magnitude as the intensity of the flow which north of the Shetland Islands carries the Atlantic water into the North Sea.

At present Mr. SMED is investigating the movements of water in the Eastern part of the North Sea in connexion with a demonstration of the distribution of the inflowing Atlantic water, where this is found in a comparatively unmixed state.

On the basis of the treatment of surface temperatures in the Atlantic for the years 1900—13 published in the Bulletin Hydrographique in 1919, Dr. JACOBSEN has started an investigation of existing regularities in the seasonal variations in temperature and of the duration of the existing anomalies of temperature. An anomaly of temperature that has once arisen will gradually be obliterated by the "casual" disturbances of the surface temperature. It has proved that this obliteration of the temperature anomalies takes place at different rates in the various areas of the Atlantic.

Dr. JACOBSEN has corresponded with hydrographers at Bergen (MOSBY, HELLAND-HANSEN, and EGGVIN) on the existing tables (by FOX and JACOBSEN) of the absorption of oxygen in sea water. This has occasioned Dr. JACOBSEN to initiate in the Danish Hydrographical Laboratory experimental work for the purpose of investigating the cause of the deviations between FOX's and JACOBSEN's tables.

In the summer of 1943, from the 15th of June to the 15th of July, Mr. SMED took part in hydrographical investigations in the Limfjord under the leadership of Mr. HELGE THOMSEN, Head of the Nautical Section of the Danish Meteorological Institute.

The correspondence of the Service Hydrographique has been conducted by Captain W. NELLEMOSE and Dr. J. P. JACOBSEN.

This Report was compiled by Dr. J. P. JACOBSEN at the request of

MARTIN KNUDSEN.

Report on the Hydrographical and Biological Card-Index of the Council.

Annex to the Report of Dr. J. P. JACOBSEN

prepared by JENS SMED

The card-index, which has been prepared by the late Administrative Secretary, Captain W. NELLEMOSE, contains hydrographic and marine-biological observations from the waters in which the Council is chiefly interested. A general view of the card-index itself, the use that may be made of it as well as some suggestions for a rearrangement of it are given below.

Arrangement of the Card-Index.

I. Hydrography.

This section contains observations of temperature and salinity taken simultaneously, monthly averages of surface temperatures in the northern North Atlantic, published in the Danish Nautical-Meteorological Annuals, and a few other collections of surface temperatures.

The cards used for recording the surface observations—the "surface cards"—differ in size and colour from those used for recording observations from a series of depths at stations—the "station cards". Further the surface cards for the different months differ from each other in size and colour. Thus the possibility of confusing the cards during the use of the card-index has been reduced to a minimum.

The surface observations at stations are recorded both on the station cards and on the surface cards. The surface cards and the station cards as well contain the following data: year, date, position, temperature and salinity. The station cards furthermore contain indications of the depths at which the recorded temperature and salinity was found and of the bottom depth. The Dutch ten-day means for temperature and salinity at the surface are recorded on the surface cards in the same way as the single observations except that the number of observations and samples on which they are based, is also indicated.

The cards generally contain reference numbers or symbols indicating the origin of the observations. The system used is the following:

In issues of the Bulletin Hydrographique from 1932 and later the observations taken by liners are marked with numbers indicating the respective routes on which they are taken, while the observations taken by research vessels or by light vessels are marked by symbols referring to the names of the vessels. These numbers and symbols used in the Bulletin Hydrographique are also recorded on the index cards. Observations printed in issues of the Bulletin before 1932 are recorded on the cards either simply by pasting cuttings from copies of the Bulletin on the cards or by writing out the observations. In the latter case the observations recorded on the index cards are generally marked BH. Observations taken from sources other than the Bulletin Hydrographique are marked with figures referring to the papers from which the observations were taken.

The cards are arranged in the following way: All cards with observations from a certain 1°-square, e.g. from the field between 56° and 57° N. Lat and 5° and 6° E. Long., are placed together. The batch of cards from every 1°-square has been divided into twelve sections, one for each month of the year. Further, every section is divided into surface cards and station cards. Finally, the cards within each of these parts are arranged according to years.

II. Biology.

This part of the card-index consists of two sections, A and B.

Section A.

From the journals of the research vessels the stations that were worked have been recorded on

yellow cards marked FISHING or, a few of them, BIOL. STAT. The cards contain year and date, and name of vessel, laboratory and country as well as position, depth and journal number of the station. Further, in the column "Gear" is registered the kind of net or other gears used during the work. Where the journal has been photographed at the Central Office the number of the negative in the Council's Leica archive is also stated. Finally, all the information extracted from any printed paper is provided with a number referring to this paper. On the reverse of the card are recorded the title of the paper and the character of the data it contains.

For each 1°-square and for each year the most important details from these cards are transferred to other (white) cards marked EGGS, YOUNG FISH or PLANKTON. These cards, however, record investigations with relatively small gears only.

Finally, pink cards marked BOTTOM SAMPLES register investigations carried out with bottom samplers and dredges.

All the cards so far mentioned with details about biology (section A) are arranged according to 1°-squares and form with the hydrographic cards one index in which, for each 1°-square, the hydrographic cards range first. The biological cards differ from the hydrographic cards not only by their colour but also by their smaller size.

The cards of section A give no information as to the catch made during the investigations, but each card gives the name of the relevant laboratory to which application may be made for further information.

Section B.

From the investigations by trawl or other large bottom gears, registered on the cards marked FISHING, the results are recorded on blue cards. The cards show, for each single haul, how many fish were taken, how many of them were measured and how many age-determined. Race investigations, if any, are recorded on yellow cards. These two series of cards together with cards giving the results of fish-marking experiments form a special index. The subdivision of these cards is primarily based upon the Latin fish names. For each species of fish the cards are grouped according to 1°-squares.

Size and Completeness of the Card-Index.

The hydrographic cards and the biological cards A amount together to some 170,000 cards of which the biological part constitutes abt. 5—10 per cent. As to the hydrographic cards abt. 30,000 are station-cards, the others surface-cards. The biological index B contains abt. 25,000 cards, among these abt. 1000 recording fish-markings.

With regard to the completeness of the card-index the following should be recorded: it contains all temperature and salinity observations published in the Bulletin Hydrographique 1902—1939; furthermore, a great many publications were gone through for hydrographic observations which were then recorded upon the cards. The hydrographic card-index may undoubtedly be considered to be fairly complete as far as observations of salinity (and simultaneous observations of temperature) from the North Atlantic, the North Sea, the Baltic, and the Norwegian Sea are concerned. In this connexion it may be mentioned that the hydrographic cards covering the area north of 50° N. have been checked, with the exception of the temperature data extracted from the Danish Nautical-Meteorological Annuals.

As to the biological section of the card-index it must undoubtedly be characterized as being rather incomplete. In the late Administrative Secretary's "Report on Card-Index Department", given in 1937 to the Consultative Committee, it is stated that this section of the card-index then contained all data from Danish research vessels and merchant ships from 1899 to the end of 1936, from the Danish Biological Station, from the Danish Marine-Biological Laboratory and from the Greenland Directorate, all Swedish data from the S/S "Skagerak" 1910—1936, both inclusive, all data from Monaco expeditions west of Gibraltar north to Spitsbergen, all data recorded from cruises of the "Pourquoi-pas?" in Atlantic waters, and in addition data from a series of other expeditions recorded in various publications. Since then no essential augmentation of this section of the card-index has taken place.

Aim of the Card-Index.

The aim of the card-index is in the first place to give a survey of the investigations carried out within a certain area. Further the hydrographic part of the index may serve as a basis for the construction of charts showing means of temperature and salinity. Material from the hydrographic index has already been used in various scientific papers.

Suggestions for a Rearrangement of the Card-Index.

1. As there will generally not be use for hydrographical and biological index-cards simultaneously it would seem reasonable to separate these two groups of the card-index. This would also facilitate an estimate of how much biological material from a certain area is contained in the index, while with the present arrangement the biological cards are apt to disappear among the hydrographic ones.
2. From the areas covered by the card-index of the Council meteorological offices and other institutions possess material concerning surface temperatures which is many times greater than that included in the card-index. It therefore seems purposeless to record in the hydrographic index surface temperatures not simultaneous with observations of salinity or any other hydrographic data. The cards recording monthly means of surface temperatures

in the northern North Atlantic extracted from the Danish Nautical-Meteorological Annuals might then be removed from the index as might also the few other collections of surface temperatures.

3. A separation of the station cards from the surface cards might possibly facilitate the use of the index. As the surface observations from the stations are already registered on the surface cards such a separation will cause no difficulties. It must be admitted, however, that even with the present arrangement it is possible to distinguish without difficulty between the two categories of cards, since the station cards differ both as to size and colour from the surface cards.

Meeting of Herring Experts

held at Charlottenlund on October 20th—22nd, 1945.

Present: Dr. H. Blegvad, Dr. Aage J. C. Jensen, Mr. Einar Lea, Mr. Alf Dannevig, Dr. K. A. Andersson, and Dr. A. Molander.

Dr. K. A. Andersson was asked to take the chair.

I. Proceedings.

Dr. K. A. Andersson gave a summary of the changes in the Swedish herring fishery during the last 50 years.

At the middle of the nineties of the last century the coastal fishery (within the skerries) had reached a maximum resulting in large catches (up to 200,000 tons). It then decreased very quickly and at the beginning of the new century the herring ceased to come into these coastal waters. In the open sea, however, off the coast of Bohuslän, herring occurred in larger numbers. In these waters a rich purse-seine fishery developed and was carried on until the twenties when a strong decline set in; at present, it is practically of no more importance there. In the Skagerak and Kattegat the herring is now so sparse that the fishery with purse-seine gives no profits.

Trawling for herring was started off the Swedish west coast during the winter of 1910/11 and is still being continued. But the catches which in the beginning consisted mostly of large herring have little by little changed to comprise small ones only, 2 to 3 years old. At present, 90 to 92 % of the trawl-herring catches in the Kattegat and Skagerak consist of such small fish.

During several decades Swedish fishermen in the Kattegat and Skagerak have fished with drift-nets. During the twenties their catches amounted up to 3000 and 4000 tons, but then again a heavy decrease set in, and during the last few years the fishery has been insignificant.

During something like 50 years a radical change has thus taken place in the occurrence of the herring; it would of course be of paramount importance to find the causes of this change. Both in Denmark and in Sweden a large volume of hydrographical observations has been collected since about 1890. In Dr. Andersson's opinion it would constitute a large and important task for the Council to work up this material in order to find out whether, during the last 50 years, the hydrographic conditions have been subject to any changes that might have caused the above-mentioned great changes in the occurrence of the herring. Dr. Andersson proposed to work up the hydrographical material with this aim in mind.

Variations in the water exchange between the North Sea and the Skagerak and Kattegat might also have produced this change in the occurrence of the herring. Should current measurements for the last decades be available, it would be extremely desirable to have them worked up.

Dr. Andersson emphasized the importance of studying the hydrographical conditions prevailing at the spawning grounds of the herring during the spawning season in order to elicit the influence which these hydrographical conditions — especially temperature and salinity — exert upon the origin of rich or poor year-classes. Such hydrographical work should also prove to be of great theoretical value. It might be that the various so-called herring races spawn in different hydrographical environments. If that be so, the different characters of the "races" could be a result of the different environments. This would mean an important step towards settling the controversy regarding the herring races. But then it would become inevitable to state which "race" spawns on the grounds that are the object of the hydrographical investigations. If possible, examinations ought also to be carried out regarding the extent of the spawning, whether it is large or small.

Dr. Jensen made a short communication on the preliminary results of an investigation into the hydrographical causes of the variations in the yields of the herring fisheries. It might be anticipated that many different hydrographical conditions during the development and migrations of the herring could cause a herring stock to become numerous and to be the mainstay of a certain fishery, for then in due time again to decrease. Every one of these conditions shows secular variations and even if there is a chronological relation between the high-season of a fishery and anomaly periods in the relevant hydrographic conditions we do not know if there also exists a definite causal relation.

The best procedure is undoubtedly first to study the physical causes of the fluctuations in the yield from one year to the other. This may be done by way of examining which factors — among all the possible ones — show a correlation with the fishery

and next by investigating more closely whether each of these several correlations is founded upon biological conditions or whether it is only a result of chance correspondence during the period under consideration. Then only will it be of interest to consider the secular changes in the relevant physical conditions. The fluctuations may be due to several causes so that, during a series of years, favourable conditions in one case may be compensated by simultaneous unfavourable conditions in another case.

With regard to the Baltic autumn herring from the Bornholm area, Dr. JENSEN had found a correlation between the fluctuations in the yield and the temperatures of the autumn and winter some years ago which undoubtedly is due to the influence of temperature on the survival of the brood. The same relation has been ascertained in the Belt Sea and the southern Kattegat and has been intimated by the Swedish drift-net fishery of the Kobbergrund and Varberg-herring. This latter fishery, however, shows a much greater correlation with the salinity at the lower water layers (ingoing current) shortly before the spawning period 3—4 years previously so that one of the causes may be the influence of the strength of the ingoing current upon the survival of the tiny fry.

At the beginning of the season, the Swedish purse-seine fishery seems to show a strong correlation with the temperature of the surface water at the beginning of autumn, while fluctuations at the beginning of the motor-trawling season for young herring — which takes chiefly herring immigrating through the Skagerak — seem to be related to the salinity at the bottom (strength of the ingoing current) at the time of the fishery. The fluctuations in the great coastal fishery off Bohuslän, finally, seem to have been in correlation with a predominance of easterly winds and the winter temperatures, and may possibly be due to the strength of the Jutland current which changes in the course of the years under the influence of the wind.

Dr. BLEGVAD called attention to the fact that the term "race" should not be taken *in sensu stricto* since phaenotypical local forms were of great importance.

Dr. JENSEN demonstrated a new method showing numerical race characters by diagrams.

Mr. LEA said that in Norway the appearance of the herring scales had been made the object of observations and he asked his colleagues to give him their assistance in procuring material for this work.

Mr. LEA further mentioned an improved formula for calculating growth.

Mr. LEA then showed various methods for measuring the length of herring.

Dr. Å. V. TÅNING reported on his experiments regarding the influence of temperature upon the race character of sea trout.

After a thorough discussion of the various problems, and demonstrations of types of scales etc. the following recommendations were accepted.

II. Recommendations.

1) The hydrographical observations from the Kattegat and Skagerak collected in Denmark and Sweden during the last 50 years should be worked up as soon as possible in order to elicit whether any changes have occurred in the hydrographical conditions that might have caused the changes in the occurrence of herring in the waters under discussion. This work should also include observations on the water exchange between the North Sea, the Skagerak and Kattegat provided such observations are available.

2) Hydrographical investigations should be undertaken on the spawning grounds of the herring at the time of the spawning season. If possible, such investigations should be carried out in the form of continuous observations during the spawning period.

3) In conjunction with the hydrographical investigations on the spawning grounds plankton investigations should be executed, including also determinations of the fat content of the plankton.

4) The examination of herring samples should include statements as to the presence of stomach contents as well as their composition and kind.

5) For the study of the herring the following characters are considered the most important ones: No. of vertebrae, No. of prehaemal vertebrae, the size of the central field of the scales, the growth data of the herrings, the age-distribution and the degree of maturity. Moreover the appearance of the scales may receive consideration as a racial character.

6) For examinations so many samples should be taken that they can be considered as representative for the stock of herring. Each sample should consist of at least 200 herring.

7) Fused vertebrae should be noted, but herring with such should be excluded from the calculations; each vertebra with several processes but without signs of fusion should be counted as one, and the herring in question should be included in the calculations. The urostyle should be counted as one vertebra.

8) The length of the herring should be measured from the tip of the snout to the tip of the ventral tail-lobe lying in the middle line.

9) It is considered of great importance that the statistics of the various kinds of herring fisheries should be made as complete as possible.

10) Experiments regarding the hatching of herring spawn and the rearing of herring fry should be promoted in order to study how far race characters are dependent upon temperature and other physical conditions and at what stage of development this dependency asserts itself. Similar investigations regarding the sprat would be desirable.

11) The hydrographical-biological sub-committee appointed at the last Council Meeting is requested to take the recommendations mentioned above under II, 1—2 into due consideration.

Reports of Area Committees.

NORTH-EASTERN AREA COMMITTEE

1940—1945.

By

Gunnar Rollefsen.

Again a war has raised barriers between nations and this time they have been more difficult to surmount than ever before. The grouping of the states taking part in the war and the vast area where war has raged arrested not only all international co-operation, but hampered also the several nations in their work in home waters. Neither Denmark, Iceland, England nor Scotland had any opportunity to work in the area during the war.

As far as Norway is concerned, some work could be carried out, but on a diminished scale. When Norway, in April 1940, became involved in the war all scientific work at sea was checked, but as conditions became more settled energies were concentrated on resuming work in order to maintain the more important observational series.

Even though liberty of movement was strongly restricted we succeeded in making pretty large collections in the coastal waters of Norway, but many tasks had to be put aside and work in operation had to be discontinued. All must be restarted now.

Norwegian fisheries exploration has suffered a great loss through the death of Oscar Sund who perished in consequence of war operations in the shipwreck of the SS. "St. Svithun" in October 1943.

The following authors have contributed to this administrative report for the years 1940—45: Mr. Paul Bjerkan, Dr. J. Eggvin, Messrs. Einar Lea, Finn Devold, Kr. Fr. Wiborg, P. Solheim, A. Revheim, Birger Rasmussen, and Magister Einar Koefoed.

CRUISES.

A total of 32 cruises have been carried out from 1.I.1940 to 12.VI.1945 by the motor cutter "Johan Hjort" and several chartered vessels. The programme of these cruises has been hydrographical as well as biological, but owing to the prevalent conditions the cruises were generally limited to the fiords and the coastal waters. The area covered by the cruises reached from Utsira to Tromsø. (In July 1940 the m/c "Johan Hjort" made a cruise to Svalbard.)

OCEANOGRAPHY.

A. On the cruises mentioned above 1339 stations were taken comprising the following observations:

	No. of Stat.	t°	S‰	O_2	pH	P_2O_5
1940.....	422	3,767	3,677	180	192	182
1941.....	187	1,802	1,758	612	341	156
1942.....	78	725	722	98	129	124
1943.....	290	2,363	1,546	81	39	38
1944.....	214	1,534	1,344	299	131	251
1945.....	48	399	—	—	—	—

B. The permanent Stations.

At the permanent stations observations of temperature and salinity were taken once every 8. respec tively 14. day.

Besides the permanent stations erected at 1. Ingøy; 2. Eggum; 3. Skrova; and 4. Sognesjøen which have been worked with few interruptions during the whole

period, further stations have been erected at Utsira and at Lista in 1942 and in 1945 at Træna. On the cruises and at the permanent stations a total of 23,000 water samples have been collected and analysed, and temperatures were measured at 24,000 points.

C. Thermograph Series.

Bergen	— Newcastle	interrupted in Sept. 1939
—	— Rotterdam	— - — —
—	— Iceland	— - April 1940
—	— Oslo	short interruptions
—	— Trondheim	short interruptions
Trondheim	— Tromsø	short interruptions
Tromsø	— Kirkenes	interrupted in Sept. 1941

PLANKTON.

In connexion with the cruises plankton was as usually collected by bag-net hauls. Previously collected material (fish larvae) has been catalogued and worked up.

A special investigation of the Nordåsvatn near Bergen for studying the production of zoo- and phytoplankton in closed waters was carried out in 1941 and 1942.

BIOLOGY.

A. Cod.

The collecting of material was strongly hampered on account of various circumstances. Taking due regard to the conditions, however, the results may be called satisfactory because we succeeded in keeping fairly well in touch with the stock of "skrei". The investigations of the cod on the Finmark coast and in Barents Sea had unfortunately to be abandoned. The collecting of samples from the local cod stocks along the coast involved great difficulties.

Measurements, age determinations and analyses of the number of vertebrae have been continued on the same lines as before.

The material is divided as follows: —

	Measured	Age determined	Vertebrae counted	
			Adult fish	0-group
1940	51,340	3,207	—	296
1941	40,141	2,420	—	595
1942	32,886	3,950	209	634
1943	33,825	3,208	162	671
1944	41,003	4,545	90	798
1945	23,195	2,788	461	—
Total	222,390	20,118	922	2,994

A small number only of samples of saithe and haddock could be taken.

B. Herring.

Efforts have been made to continue without interruption the observations as to age, length, etc., of the herring catches, and notwithstanding the steadily growing difficulties caused by the war, they were successful as far as the adult herring is concerned. But it proved increasingly difficult to procure random samples from the catches of young herring (fat herring and small herring) so that these observations are incomplete.

The table below shows the scope of this work.

	Adult herring		Immature herring	
	No. of samples	No. of fish	No. of samples	No. of fish
1940	37	6,611	10	1,115
1941	26	4,393	12	1,154
1942	25	4,315	3	300
1943	26	4,799	7	805
1944	21	3,625	7	1,129
1945	25	7,502	7	734

On the cruises observations were taken regarding the occurrence of the herring shoals by means of the recording echo-sounder. These observations are partly mentioned in papers by the late Oscar Sund published in the *Annales Biologiques*, Vol. I.

During the work in 1945 some samples of herring of both large and small size were made the object of a special examination in order to provide the greatest possible accuracy in the observations regarding the difference in the total length measured according to Heincke's definition — used up to now in Norway — and according to a definition recommended by the committee of experts in Edinburgh, 1932, as well as according to the definition worked out by A. C. Johansen in 1911.

The differences make it impossible to compare directly, on a statistical basis, the lengths measured according to the various definitions, but on the basis of the above-mentioned observations it will be possible to prepare a table for the conversion of the measures according to Heincke's and Johansen's definition, and *vice versa*.

At the same time a great number of independent and repeated measurements were made in order to elicit which of the three definitions should be preferred. These measurements demanded the construction of a measuring apparatus both commanding high technical precision and reducing as far as possible the individual error. This apparatus proved to be handy and effective, and henceforward it will be used in the routine work of mass observations for the biological statistics.

C. Sprat.

During the years in question 14 cruises — 222 stations — to the sprat area were undertaken. The collections consisted of

47	samples in 1939	50	samples in 1943
38	— - 1940	53	— - 1944
43	— - 1941	38	— - 1945
62	— - 1942		

The samples have been examined as to age, maturity, length, weight, and — in most cases also as to fat.

D. Other Investigations.

(a) Examinations have been made of the sea-mussel (*Mytilus edulis*) and the horse mussel (*Modiola modiolus*), their occurrence, growth and general biology.

(b) The examinations carried out since 1934 for estimating the effect of the artificial hatching of plaice through the liberation of hybrid fry (*Pl. platessa* ♀ and *Pl. flesus* ♂) were interrupted on April 9th, 1940.

During 5 years newly hatched hybrid fry had been liberated into the closed Borgenfiord; the occurrence of hybrid fry was being controlled by seine-net hauls in autumn.

	Liberated No.	Hybrids in the catches in autumn %
1935	2 million	1·5
1936	13 —	30·0 (etc.)
1937	7 —	0·5
1938	10 —	96·0
1939	7 —	40·0

Samples of the 0-group of plaice, flounder, and hybrids of these were collected for counting the number of vertebrae; about 1,000 specimens.

The examination of commercial catches started for providing quantitative data had unfortunately to be discontinued on account of circumstances.

(c) The rearing of plaice based upon nauplii of *Artemia salina* was started on an enlarged scale in 1939 and 1940 together with serial experiments of rearing plaice larvae of definite parents under different conditions. The experiments were interrupted in April, 1940, and could not be resumed later.

(d) The rearing of herring larvae has also been initiated parallel to investigations of stomach content, mortality and phototropism of herring larvae in the sea.

(e) *Ammodytes* has been made the object of race studies; a considerable increase in the number of vertebrae was found from Bergen to the Murman coast.

(f) Investigations of the deep-sea prawn in the northern and arctic waters have revised our ideas of the question as to age and growth of prawns. The development of the ripe stages is retarded going northwards. In the Oslofiord the prawns mature into males in the second year, into females in the third; in the cold fiords in northern Norway the development takes 1—3 years more. At Vigrafeltet, Møre, the prawns have a more intermediary character. At Svalbard, the prawns attain the male stage only in their fourth and fifth year, the female stage in the sixth year and later.

Each single prawn ground must probably be considered as an independent biological unit with a characteristic cycle of growth and development. The environment seems to have a decisive influence. These questions are of importance for the recruiting ability and consequently for the toll taken by the fishery on the several prawn grounds.

(g) Norway Haddock. Age and growth studies. A preliminary survey has been prepared, but the material is still relatively small.

List of Norwegian Publications dealing with Investigations in the Area during 1940—1945.

A. Rep. Norw. Fish. and Mar. Invest.

Vol. VI, No. 3, 1940.

Alf Dannevig: The Propagation of the Common Food Fishes on the Norwegian Skager Rack Coast.
No. 4, 1940.

Fisken og Havet (Fra fiskeriundersøkelsene i 1939).

Oscar Sund: Sildeundersøkelser i 1939.
1. Sildens alder og størrelse i 1939.
2. Undersøkelser på sjøen.

Th. Rasmussen: Islandssild i norske kystfarvann.
— To raser innenfor den norske vintersild.

P. Soleim: Sildelarvene på vårsildfeltet.
— Storsildas og vårsildas gytefelter.

Gunnar Rollefsen: Skreibestanden i 1939.

Paul Bjerkan: Brislingundersøkelser i 1939.
No. 5, 1940.

Jens Eggvin: The Movements of a Cold Water Front.
— Temperature Variations along the Norwegian Coast based on Surface Thermograph Records.
No. 6, 1941.

Thor Iversen: Ishavsøya Hopen.
No. 7, 1941.

Sven Runnstrøm: Racial Analysis of the Herring in Norwegian Waters.
No. 8, 1941.

Sven Runnstrøm: Quantitative Investigations on Herring Spawning and its Yearly Fluctuations at the West Coast of Norway.

Vol. VII, No. 1, 1942.

Fisken og Havet (Fra fiskeriundersøkelsene i 1940).

Oscar Sund: Sildeundersøkelser i 1940.
1. Sildas alder og størrelse i 1940.
2. Undersøkelser på sjøen.
3. Andre undersøkelser.

Gunnar Rollefsen: Litt om skreiens dødelighet.
— Skreibestanden 1940.

Jens Eggvin: Den store utskiftning av vannmassene langs norskekysten i 1940.

Paul Bjerkan: Brislingundersøkelser i 1940.

Thorolv Rasmussen: Borgepollsilda.
No. 2, 1942.

Peder A. Soleim: Årsaker til rike og fattige årganger av sild.
No. 3, 1942.

Finn Devold: Plaice Investigations in Norwegian Waters.
No. 4, 1942.

Birger Rasmussen: Om dypvannsreken ved Spitsbergen.
No. 5, 1942.

Per Ottestad: On Periodical Variations in the Yield of the Great Sea Fisheries and the Possibility of establishing Yield Prognoses.
No. 6, 1944.

Fisken og Havet (Fra fiskeriundersøkelsene i 1941).

Oscar Sund: Sildeundersøkelser i 1941.
1. Undersøkelser av sildeprøver.
2. Undersøkelser på sjøen.
Gunnar Rollefsen: Skreiens fornyelse.
Paul Bjerkan: Brislingundersøkelser i 1941.
Jens Eggvin: Den oseanografiske situasjon i det norske kysthav 1941 og fem-års middeltemperaturer i overflatelaget og ved bunnen.
— Oseanografisk beretning.
No. 7, 1944.
Kristian Fredrik Wiborg: The Production of Zooplankton in a Landlocked Fjord. The Nordåsvatn near Bergen in 1941—42.
No. 8, 1944.
Bjørn Vindenes: On the Tidal Waters in the Nordåsvatn.
No. 9, 1944.
Jens Eggvin and Finn Spinnangr: Fog Forecasting and Sea-Surface Temperature.
No. 10, 1945.
Fisken og Havet (Fra fiskeriundersøkelsene i 1942).
Oscar Sund: Sildundersøkelser i 1942.
Paul Bjerkan: Brislingundersøkelser i 1942.
Vol. VIII, No. 1, 1945.
P. A. Soleim: A Contribution to the Knowledge of the Lesser Sandeel (*Ammodytes Lancea*) in North European Waters.
No. 2, 1945.
Birger Rasmussen: Trekk fra dypvannsrekens biologi i norske kystfarvann.
I. Vigrafjorden, Møre.

B. Årsber. vedk. Norges Fiskerier.

Årsberet. 1938 (1940).
Alf Dannevig: Beretning fra Flødevigens Utklekningsanstalt 1937—38.
Asbj. Johannesen: Statens forsøks- og lærebruk for fiskere 1937—38.
Anderssen-Strand: Lofotfisket 1938
including
Oscar Sund: Torskebestanden i 1938.
Gunnar Rollefsen: Skreiens alder.
Jens Eggvin: Oceanografisk beretning. Bunntemperaturen langs Norges kyst....
Gerhard M. Gerhardsen: Lønnsomheten ved vårtorskefisket i Finnmark.
Beretninger om Torskefisket (utenom Lofoten) og silde-, makrell-, bank- og kveitefisket samt selfangsten i 1938.

Årsber. 1939 (1940).
Asbj. Johannesen: Årsmelding fra Statens Forsøks- Lærebruk for Fiskeribedriften i Finnmark 1938—39.
Anderssen-Strand: Lofotfisket 1939
including
Gunnar Rollefsen: Skreibestanden. Utsiktene for 1940.
Kartbilag: Kurvekart over Vestfjorden, utarb. av Odd Bostrøm, redig. av Oscar Sund.
Oscar Sund: Skreifloen i Østlofoten. Skreiens "gyteplasser" og perioder i torskefisket.
Gerhard M. Gerhardsen: Lofotfiskets lönnsomhet 1937, 1938 og 1939. Beretninger om torskefisket (utenom Lofoten).

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Gunnar Rollefsen: Utklekking og oppdretting av saltvannsfisk. "Naturen" 1940, Nr. 6—7. Bergen.
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Tore Sund: Norsk fiske II. Fiskerienes ökonomiske geografi. Norsk Geogr. Tidsskr. X, 4. Oslo 1944.

NORTH-WESTERN AREA COMMITTEE

1940—1945.

By

Å. Vedel Tåning.

During the second world-war period very little of the work planned by the Committee could be carried out in the North-Western Area. Practically all work at sea had to be cancelled and much of the routine work concerning collection of measurements and otolith samples of the most important food fishes came to a standstill, most so in the area nearest the war-zone, the Faroes, less in Icelandic waters and to a certain degree least in the most remote area, viz. Greenland, where rich material of samples of cod was collected. Also such routine work as temperature readings and other hydrographical work had nearly to be stopped during this long period. As it was impossible for years to keep contact between the laboratories in Denmark and the collaborators at Faroes, Iceland and Greenland, work demanding a certain degree of contact stopped completely. All work of a continuous nature has accordingly suffered a very great loss during the war period.

As all results from investigations in the area are to be published in the *Annales Biologiques* they have been omitted in this report, which gives only the facts concerning work carried out by the various countries in the different sub-areas.

Denmark.

1940: No work at sea.
The occupation of Denmark April 9th cut off the connexion with the Faroes, Iceland and Greenland, and planned work to be carried out *inter alia* from chartered motorboats in the Faroe waters was cancelled.
Laboratory work was carried out: on material from previous years on cod, saithe, haddock, halibut, plaice, lemon sole, redfish (*Sebastes*) and trout; on plaice and cod marking experiments; on benthonic animal communities of Faxa Bay. Aquarium experiments for improvement of the cod-marking method were started.

1941: No work at sea.
Laboratory work was continued on the same lines as in the previous year, and some other items included in the programme (age-determination of *Brosmius brosme*, fishing results in Faroese waters, biology and development of *Nephrops*). Work on the biology of Euphausiaceæ was commenced. Aquarium experiments on racial characters were commenced.

1942: No work at sea.
Laboratory work continued as in previous years.

1943: No work at sea.
Laboratory work continued as in previous years.

1944: No work at sea.
Laboratory work continued as in previous years; studies on Sand-eel (*Ammodytes*) were included in the programme.

1945: Collection of material of cod from commercial catches for the study of fluctuations in the stock was started in the Faroe area during the summer. Hydrographical observations from navy vessels were also started again.
Laboratory work, however, continued as in previous years.

Greenland. (Paul M. Hansen).

During the war since the 9th of April there has been no direct communication with Greenland and no investigation-vessel has worked in the Greenland area in this space of time. By the telegraph, however, the Landsfoged Eske Bruun was informed to continue the collection of otolith samples and measurements of cod as usual.

Cod. In the seasons 1940 to 1944 several thousands of cod-otoliths, perhaps between twenty and thirty thousand, with measurements have been collected nearly at all the fishery-stations at West-Greenland from Augpilagtok near Cape Farewell to Niarkornat in Umanak fjord. Only seven of the samples consisting

Table 1. Recaptures of Cod.

The number of specimens taken at Greenland + Iceland.

Year of recapture \ Year of marking	1931	1933	1934	1935	1936	1937	1938	1939	Total
1939	—	—	1 + 0	—	1 + 0	—	2 + 1	1 + 0	5 + 1
1940	1 + 0	—	—	2 + 0	2 + 0	12 + 10	14 + 6	15 + 0	46 + 16
1941	1 + 0	—	—	2 + 0	3 + 0	7 + 13	6 + 15	4 + 7	23 + 35
1942	1 + 0	—	—	2 + 0	2 + 1	11 + 2	21 + 3	7 + 2	44 + 8
1943	—	—	—	1 + 0	5 + 0	0 + 7	0 + 3	2 + 3	8 + 13
1944	1 + 0	—	—	—	2 + 0	2 + 0	0 + 4	2 + 2	7 + 6
1945	—	1 + 0	—	—	1 + 0	1 + 0	—	0 + 1	3 + 1
Total...	4 + 0	1 + 0	1 + 0	7 + 0	16 + 1	33 + 32	43 + 32	31 + 15	136 + 80

of 1,014 otoliths have hitherto been examined for age determinations. The seven localities chosen are from south to north: Nanortalik 1942 and 1944, Sukkertoppen 1944, Agto 1943 (June and August) and 1944 and Niakornat 1941.

It is obvious that the year-classes 1934 and 1936 have been rich in five of the samples. These two year-classes were supposed to be rich as early as in 1939. It is very interesting to see, that the very old year-classes 1926, 1929 and 1931 still occur and dominate in the samples from Niakornat in 1941 and Agto in June 1943. In Agto 1943 we meet the phenomenon which has been seen in previous years especially at Kangamiut and Sukkertoppen that in spring the stock of cod only consists of very old individuals. Later in summer the picture changes and younger year-classes dominate. Between the younger year-classes only the year-class 1939 seems to play a rôle, but the material hitherto examined is too scarce to say anything with security about that.

No marking experiments have been made during the war, but a number of recaptures of cod marked at Greenland were received from Greenland (136 specimens) and from Iceland (80 specimens), through Fiskifélag Islands. These recaptures (216) are given in Table 1 above.

Greenland Halibut. From the marking experiments in the years 1935, 1936, 1937 and 1938 17 recaptures have been received taken in the following years: 1939: 3 sp., 1940: 9 sp. and 1941: 5 sp. The recaptures in the different years are shown in Table 2 below. Recaptures from previous years are given in Ann. Biol. Vol. I, p. 119, 1943.

Greenland Shark (*Somniosus microcephalus*). Three recaptures of marked Greenland sharks have been made. From a marking experiment in 1936 one recapture was made in 1942, and from another marking experiment in 1939 two recaptures were made both in 1942. These results prove the possibility of marking experiments with this deep-sea shark.

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Table 2. Recaptures of Greenland Halibut.

	Locality	Marking year	No. marked	1939	1940	1941	Total (Previous recaptures included)	%
North-Greenland	Jakobshavn	1935	364	1	3	—	91	25·0
		1936	76	—	1	—	23	30·3
	Satut (Umanak distr.)	1936	19	—	—	1	1	5·3
South-Greenland	Arsuk	1937	194	1	2	1	10	5·2
	Lichtenaufjord	1937	76	1	1	3	24	31·6
		1938	28	—	2	—	6	21·4

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— North Western Area. Cons. Perm. Internat. p. l'Explor. de la Mer, Ann. Biol., Vol. I, p. 73 et seq. Copenhague 1943.

Iceland.

Introduction. The fisheries investigations run by the Fishery Department of the University Research Institute, Reykjavik, have been continued, as far as possible, during the war. However, they have had to be restricted in different ways owing to different causes, more or less directly as results of the war. Thus the patrol vessel "Þór", which had been equipped for scientific work in 1938, was taken over by the government for transport of fish to Great Britain in the winter of 1939—1940. Therefore we were prevented from carrying out any considerable work at sea. The other patrol boats, not equipped for investigations, were, beside their patrol service, largely engaged in destroying mines or transporting passengers and goods between inland harbours for lack of other vessels for these purposes. Finally some areas were closed to investigations as well as to fishing by naval forces.

The collecting of material from the fishing places met with great difficulties from the year 1941 on. It became difficult to get otolith material as there was practically no "klipfish" or "stockfish"-curing, the fish only being gutted and exported frozen or on ice to the English harbours. In many fishing places the fish was not landed at all, but was transferred directly from the fishing boats to the cargo vessels. After having faced these facts we tried to provide for means of securing material and the result will be given below for each year separately.

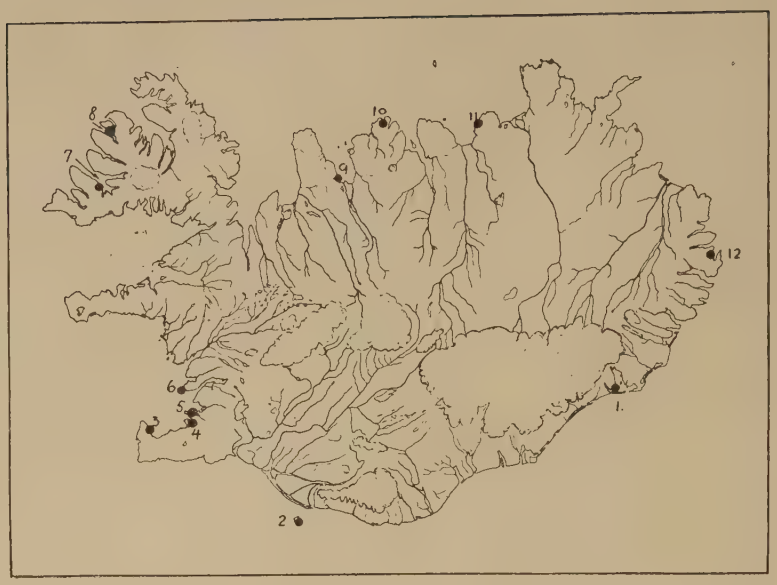
Table 3.

The Yield of the Demersal Icelandic Fisheries in the Years 1939—1941 and 1944, and the Average Annual Yield of all Demersal Fisheries in Icelandic Waters during the Period 1919—1937 (1000 kg).

Species	1939	1940	1941	1944	Aver. ann. catch in Icel. waters 1919—1937
Cod	136,782	147,347	156,241	204,936	346,018
Saithe	11,417	6,262	15,499	49,851	36,637
Haddock	6,709	19,476	14,454	8,842	38,859
Ling	1,495	1,134	1,651	247	5,535
Torsk	328	462	792	1,838	1,666
Halibut	403	1,031	883	1,179	3,790
Plaice	1,890	4,343	3,290	3,176	6,472
Lemon Sole	256	1,175	1,220	767	1,925
Witch	200	704	1,204	736	764
Dab				236	807
Megrim				25	200
Catfish	1,447	3,642	4,627	6,865	9,755
Norw. Hadd.	551	1,494	794	7,761	15,172
Skate + Ray	161	591	405	342	1,334
Miscellaneous	1,877	2,426	2,094	3,261	10,036
Total...	163,516	190,087	203,154	290,062	478,970

Localities of Cod-Sampling Work.

1 = Hornafjord
2 = Westmanna Islands
3 = Keflavik
4 = Hafnarfjord
5 = Reykjavik
6 = Akranes
7 = Bildudalur
8 = Önundarfjord (Flateyri)
9 = Saudárkrókur
10 = Siglufjord
11 = Húsavik
12 = Nordfjord



1940.

Work at Sea. In the course of this year Icelandic fishing activities were greatly increased, and we did not succeed in our efforts to get a vessel to carry out the routine work in Faxa Bay until at the end of the year (Nov. 1st—4th), when we chartered the steam-trawler "Reykjaborg" to do the work. In February of the next year (1941) this trawler was torpedoed by a German submarine and even the routine work in Faxa Bay had then to be postponed until the end of the war.

Cod. 50,182 cod were measured and 3,827 otoliths collected in the following places (number of otoliths in brackets): Hornafjord 2,075 (2,009), Westm. Isl. 15,037 (1,239), Keflavík 6,624 (562), Reykjavík 3,056 (100), Akranes 2,400 (198), Bíldudalur (227), Önundarfjord 794 (289), Skagafjord 369 (79), Siglufjord 1,619, Húsavík 935 (136), Nordfjord 3,260 (see map). Further, material was collected on board some vessels: The patrol boat "Odinn" 101, S/S "Reykjaborg" 3,486 (99) and S/S "June" 9,644 (603).

Haddock. 23,782 fish were measured and 1,500 otoliths collected: In Hornafjord 279 (96), Westm. Isl. 13,597 (904), Akranes (100), Siglufjord 20, S/S "Reykjaborg" 1,638 (100) and S/S "June" 8,148 (300).

Saithe. 6,757 fish were measured and 1,701 otoliths collected; at the Westm. Isl. 399, and on board the steam-trawlers "Reykjaborg" 43 and "June" 6,315 (1,302).

Ling. 262 fish were measured, at the Westm. Isl. 248 and on the "Reykjaborg" 14, and 50 otoliths were collected (Westm. Isl.).

Plaice. 2,127 plaice were measured and 951 otoliths collected, in Reykjavík 1,697 (697), Bíldudalur (144) and on the "Reykjaborg" 226 (110).

Herring. The lengths of 21,329 herrings were measured, 20,985 of which had been caught off the north coast and 344 off the south-west coast. 3,700 of the north-coast herrings were weighed and the number of vertebrae was counted in 3,800 herrings from the north and 344 from the south-west coasts. 3,587 of the north-coast herrings and 179 herrings from the south-west coast were examined as to the age and 2,115 herrings (1,981 north coast and 134 south-west coast) were fit for scale measurements.

Salmon and Trout. Material from different rivers of the country was secured for salmon (801) and trout (230) investigations. All this material has now been worked up, but only a part of it has been published (see later).

Plankton. 192 samples were taken with the Hardy Plankton Indicator and 138 vertical hauls were made with a Hensen net.

1941.

No **work at sea** could be done, but the investigations on the fish stock were continued as far as possible.

Cod. Otoliths were taken from 2,933 fish and 27,401 were measured. At many of the stations, where work had been carried out in the previous years, we had to postpone our observations. The stations which could be run were: Hornafjord 590 (90), Westm. Isl. 5,250 (390), Keflavík 2,200 (199), Hafnarfjord 6,431 (1,156) and Nordfjord 653. From commercial trawl-catches 12,277 cod were measured and 1,098 otoliths collected.

Haddock. 14,432 fish were measured and 847 were examined as to the age; at the Westm. Isl. 8,503 (350), Hornafjord 302 and on board commercial trawlers 6,827 (497).

Table 4.

Iceland 1939—1945. Number of Marine Fish measured and Number of Otoliths collected.

	Species	1939	1940	1941	1942	1943	1944	1945	Total
Measurements	Cod	44,600	50,182	27,410	15,097	46,057	28,428	50,000[1])	261,774
	Haddock	15,039	23,782	14,432	11,703	27,636	23,040	15,000[1])	130,632
	Saithe	4,952	6,757	385	2,000	—	375	—	14,469
	Ling	—	262	—	—	—	—	—	262
	Halibut	2,554	—	—	—	—	—	5,000[1])	7,554
	Plaice	12,588	2,127	—	—	—	—	—	14,715
	Norw. Hadd.	2,737	—	—	—	—	—	—	2,737
	Total...	82,470	83,110	42,227	28,800	73,693	51,843	70,000	432,143
Otoliths	Cod	4,022	3,827	2,933	2,010	5,918	3,646	6,000[1])	28,356
	Haddock	2,000	1,500	847	1,269	2,770	2,029	2,500[1])	12,915
	Saithe	4,952	1,701	73	500	—	100	—	7,326
	Ling	—	50	—	—	—	—	—	50
	Halibut	2,406	—	—	—	—	—	900[1])	3,306
	Plaice	1,000[1])	951	—	—	—	—	900[1])	2,851
	Norw. Hadd.	—	—	—	—	—	—	—	—
	Total...	14,380	8,029	3,853	3,779	8,688	5,775	10,300	54,804

[1]) The figure is approximate.

Saithe. Only 312 fish were measured and 73 examined for age. The material was provided by commercial trawlers.

Herring. 3,830 herrings from the North (2,903) and (927) from the south-west coasts were measured. From the north-coast material the number of vertebrae in 2,365 herrings out of 2,600 was counted and in 756 from the south-west coast, and 1,508 scales (1,129 north coast, 379 south-west coast) were fit for measurement.

Salmon and Trout. During the previous year (1940) investigations on the fish stocks in Lake Mývatn (North Iceland) were started. They were continued and finished this year, when 700 fish, mostly char, were treated. This material has been worked up, but not published. Further, 247 salmon from different rivers were investigated.

Plankton. During the summer 1,500 herring stomachs were investigated and 274 samples were taken off the north coast with the Hardy Plankton Indicator.

1942.

No work could be carried out at sea, and the collecting of material from commercial catches still had to be restricted.

Cod. 15,097 were measured and 2,010 samples were taken for age-investigations. Only the Westm. Isl. 8,718 (799) and Keflavík 750 (100) stations could be run, and 5,629 measurements (and 1,111 otoliths) were provided by commercial trawlers.

Haddock. Commercial trawlers provided 1,819 data on size and 419 otolith samples. At the Westm. Isl. 9,884 fish were measured and otoliths were taken from 850 fish. Thus 11,703 haddock were measured in all and 1,269 were examined for age.

Saithe. Commercial trawlers provided 2,000 measurements and 500 otolith samples.

Herring. This year investigations were made on the north-coast herring only. 19,050 fish were measured and 3,200 weighed. Countings of vertebrae were carried out on 2,476 fish, 2,478 were examined as to age and 916 scale measurements were carried out. Finally 1,680 herring stomachs were investigated.

Salmon and Trout. Only 29 salmon were investigated.

1943.

Work at Sea. No research work was carried out at sea, but collecting of material from some of the most important fishing places could be increased very much.

Cod. 46,057 fish were measured and 5,918 age-analysed. This material originated from: The Westm. Isl. 30,552 (2,911), Keflavík 1,207 (107), Akranes 1,075 (102) and from commercial trawlers 13,223 (2,798).

Haddock. Except for 89 otolith samples from commercial trawlers, fieldwork was only carried out at the Westm. Isl., where 27,547 fish were measured and otoliths were provided from 2,681 fish for age investigations.

Herring. Measurements: 4,726 from the north coast, 944 from the south-west coast, 5,670 in all. 3,500 of the north-coast herrings were weighed. Vertebrae countings were made on the same number of north-coast herrings and on all the material from the south-west coast. Further, 3,184 herrings from the north and 896 from the south-west coasts were age-analysed, and the corresponding numbers of scale measurements were 3,184 and 896 resp.

No **plankton** hauls could be made, but 1,550 stomachs were analysed.

Table 5.

Iceland 1939—1945. Number of Herrings investigated.

Year	Measured	Weighed	Vert. Count.	Age	Scale-Meas.	Stomachs
1939	10,278	4,396	5,792	3,837	407	1,950
1940	21,329	3,700	4,143	3,766	2,115	1,550
1941	3,830	2,600	3,101	3,104	1,508	1,500
1942	19,050	3,200	2,476	2,478	916	1,680
1943	5,670	4,444	4,444	4,080	4,080	1,550
1944	9,953	4,500	5,377	5,030	1,764	3,320
1945	5,500	5,500	5,500	5,500	—	950
Total...	75,610	28,340	30,833	27,795	10,790	12,500

Salmon. 148 fish were investigated in the usual manner.

1944.

No **work at sea,** and only one land station could be run: the Westm. Isl.

Cod. Measurements were made on 26,832 cod at the Westm. Isl. and otoliths secured from 2,600 fish. Besides this 1,596 cod from commercial trawl-catches were measured and 1,046 otoliths taken. The entire material thus amounted to 28,428 measurements and 3,646 otoliths.

Haddock. Material was collected at the Westm. Isl. only. It amounted to 23,040 measurements and 2,029 otoliths.

Saithe. 375 measurements were carried out and 100 otoliths taken at the Westm. Isl.

Herring. 9,953 herrings were measured, 9,076 of which originated from the north and 877 from the north-west coasts. 4,500 of the north-coast herrings were weighed and examined for number of vertebrae, and vertebrae were counted in all the material from the north-west coast. Age-analyses were carried out on 4,263 of the herrings from the north and 767 herrings from the north-west coasts. Only 1,764 herrings (from the north coast) were fit for scale measurements. 3,320 herring stomachs were examined.

Salmon. 131 fish were examined in the usual manner.

1945.

Work at Sea. Only now, at the end of the war, was it possible to reorganise the routine work in Faxa Bay. Three trips have been made out in the bay, with chartered motor-vessels operating with trawl (65-foot head-line). The first took place in February, the second in May and the third in September. A fourth trip is intended in November.

Cod. Many of the old stations have now been taken up again. As the work is not yet finished, we cannot tell what the final result will be, but we already have over 50,000 measurements and more than 6,000 otoliths from: Hornafjord, Westm. Isl., Keflavík, Akranes, Ísafjord, Siglufjord, Þórshöfn, Nordfjord and from steam-trawlers.

Haddock. Over 15,000 measurements have been made at the Westm. Isl. and about 2,500 otoliths have been collected. Further, the routine work in Faxa Bay has brought abt. 11,000 measurements and material for abt. 900 age-determinations.

Plaice. On the cruises in Faxa Bay over 5,000 plaice have been measured and otoliths taken from about 900.

Halibut. A good material has been provided from Faxa Bay, consisting of abt. 900 otoliths and some more measurements.

Other Demersal Species. In the Faxa Bay material we have about 16,000 measurements of different species of fish and several hundred otoliths have been collected in order to compare the growth of certain species, e. g., the dab, as it is now, to what it was before the war, when otolith material was secured.

Herring. About 5,500 fish have already been measured, 3,000 from the north and 2,500 from the south-west coasts (Akranes). Special attention has been paid to the south-west-coast herring, wherefore a new field station has been started on Akranes, where collecting of material will be continued until late autumn. All the herring examined this year have been weighed, the number of vertebrae has been counted and scales collected for age-determination. Finally, 950 stomachs from north-coast herring were examined.

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— Makríllinn vid Ísland (The mackerel in Icelandic waters). Náttúrufr., pag. 138—143.

— Túnfiskur (The tuna in Icelandic waters). Náttúrufr., pag. 144—148.

SOUTHERN NORTH SEA COMMITTEE

1940—1945.

Denmark. (Å. V. Tåning).

1940.

In the northern part of the Waddensea off south Jutland young **plaice** were captured with the Johansen young-fish trawl in May, June, September and October (50 haules). 0-group plaice was especially investigated. Material of stomach content of plaice from the Waddensea was investigated. 300 plaice were marked and liberated off Horns Rev October 28th.

Measurements of 13,152 plaice were carried out in Esbjerg fish market and in Thyborøn; otolith samples were obtained of 1,020 specimens. Otoliths of 525 **cod** were collected.

1941.

Young-**plaice** trawling was carried out in the Waddensea south to the German frontier in June, August and October (18 hauls). Stand-nets were tried for investigation of the stock of 0-group plaice in the Waddensea, *inter alia* also the dispersion of these small stages in the tidal zone. Stomach investigation in plaice continued. 200 plaice were marked off Horns Rev May 19th.

Market measurements of plaice were made in Esbjerg; 12,213 measured; otolith samples of 568 specimens.

1942.

Young-**plaice** trawling was carried out in the northern part of the Waddensea (Manø) in July, August, September and October (46 hauls). The experiments with stand-nets were continued. Stomach investigations in plaice from the Waddensea were also continued. 200 plaice were marked off Horns Rev November 9th.

Market measurements of plaice were carried out in Esbjerg; 7,280 measured; otolith samples of 385 specimens.

1943.

Young-**plaice** trawling was carried out in the northern part of the Waddensea in June, July, September and October-November (27 hauls). Experiments with stand nets had to be cancelled owing to military operations. Stomach investigations in plaice from the Waddensea were continued. 200 plaice were marked and liberated off Horns Rev 30th October—2nd November.

Market measurements of plaice in Esbjerg were carried out in March, July, September and November (7,500 measurements, about 1,300 otoliths). A small material of **cod** otoliths was obtained.

1944.

Owing to the very difficult situation only few operations were possible in the Waddensea area. Young-**plaice** trawling was carried out in June, September and November, but only 14 hauls were secured in the Ho-Bay area. Also the stomach investigations in plaice were possible on a small scale only. Marking of plaice off Horns Rev was impossible. And market measurements only possible on a small scale in March and June in Esbjerg. A sample of **cod** otoliths was obtained as also of large **haddock** (captured south-east of Dogger Bank in July).

During the war period material from cruises of the pre-war period has been dealt with in the laboratory.

1945.

In 1945 the work in the Waddensea could be resumed in June and will be continued as previous to the war. Also market measurements etc. have been resumed. The work of the year is, however, not yet finished.

France. (P. Desbrosses).

Le **hareng** guai, c'est-à-dire ayant pondu, est moins recherché par les pêcheurs que le hareng plein, n'ayant pas encore frayé. Le hareng plein se capture de nuit et au large; les ordonnances ennemies empêchèrent sous l'occupation la pratique de cette pêche; seul le hareng guai, qui se capture de jour au voisinage des côtes, de la mi-décembre à la mi-mars, put être pêché, sur le littoral français de la Mer du Nord par les bateaux français et belges, à l'aide du chalut à plateaux.

L'hiver 1941—42 le port de Gravelines reçut 14,500 tonnes de hareng guai des bateaux français et belges. L'hiver suivant Gravelines n'en reçut que 3,400 tonnes et Dunkerque 16,200. En 1943—44, il fut débarqué 814 tonnes seulement à Gravelines et 25,000 tonnes à Dunkerque.

Un fait intéressant signalé par J. Delpierre, armateur de Boulogne s/ Mer, dans un rapport documenté qui prouve l'intérêt qu'attachent les armateurs aux recherches de biologie marine, est le déplacement de la pêcherie vers le nord: les bateaux d'abord rassemblés à Gravelines se sont installés à Dunkerque en 1942—43 et l'hiver suivant; les bancs de poisson d'abord groupés entre Calais et Dunkerque se rassemblèrent en 1942—43 et 1943—44 entre Dunkerque et Ostende.

Delpierre attribue ce déplacement au vent et à la température. Aux vents froids de Nord-Est à Sud-Est des hivers précédents, succédèrent des vents chauds du secteur Sud-Ouest à Ouest qui auraient obligé les bancs à se grouper plus à l'est à la recherche des eaux froides.

England. (R. S. Wimpenny).

Measurements of **cod, haddock,** and **whiting** caught in an area near the Firth of Forth were carried out from March, 1941 to April, 1945 when the vessels concerned became free to go elsewhere and left these grounds. Measurements of portions of the various categories were raised to the totals of the categories landed to give the following figures, cod, 80,000, haddock, 135,000 and whiting 31,000. Measurements were also made at Grimsby over a shorter period.

Samples of 2 stones of **plaice** per month have been taken since January, 1941 from an inshore ground mainly six to seven miles from the shore in Rye Bay near the eastern entrance to the Channel. These fish were dealt with for length, sex, individual weight, and age by otolith reading. The percentage age composition for the different years is given below.

Age-Group	1941	1942	1943	1944
I	1	1	3	1
II	38	14	17	17
III	22	28	17	8
IV	20	27	25	13
V	12	17	16	22
VI	4	7	10	18
VII	1	4	6	12
VIII	1	1	2	6
IX and over	1	1	4	3

It will be seen that the 1939 year-class was of special importance in this population and that the average age appears to have increased during the war in the manner expected.

Commercial statistics were maintained for all species together, and show the changes in density in each fishery region.

Figures of cwt. per 100 hours fishing by steam trawlers in the North Sea are as follows: —

Region	1938	1941	1942	1943	1944
IV a	327	655	763	1,152	1,138
IV b	99	372	502	503	399
IV c	71	—	—	356	451

The catch per hours absence of the inshore motor trawlers of the Rye Bay plaice ground showed a similar trend.

TRANSITION AREA COMMITTEE

1940—1944.

By

H. Blegvad.

Denmark. (H. Blegvad).

Biology.

Owing to the war the research steamer S/S "Biologen" has not been at disposal for the Danish Biological Station. The motor boat "Havkatten" has been used for coastal investigations during the summer of the years in question. Smaller vessels from the Danish Fishery Patrol have been placed at disposal for the research work for shorter periods and in minor waters. In some cases investigations have been carried out from hired fish-cutters. It has, however, been possible only to undertake a minor part of the normal research work at sea.

I. Work at Sea.

1) Fishing experiments with the "eeltog" (a small-meshed ottertrawl) have been carried out in the Limfjord every spring (May og June) and autumn (September). In connexion with the fishing experiments valuations of the sea bottom by means of the Petersen bottom sampler were made.

Fishing experiments with small trawls have been carried out every spring and autumn 1941—44 in the Isefjord complex in connexion with investigations of catches from the commercial fishery and valuations of the sea bottom with the Petersen and van Veen bottom samplers. Bottom valuations have also been carried out, to a lesser degree, in the Sound.

2) The Johansen young-plaice trawl was used along the coasts in the summer (July and August); in 1944 the Skagerak and the northern Kattegat could not be included in the investigations owing to the war conditions.

3) Markings of plaice were made from various harbours in northern Jutland in 1940 and 1941.

Markings of flounder and plaice were made in the Isefjord 1943 and 1944 and of sole in the Isefjord and the southern Kattegat in 1941.

4) Transplantations of plaice. On account of the war only a part of the usual transplantations could be accomplished. The transplantations of the various years are shown in the subjoined table.

A. Transplantations to the Belt Sea and adjacent waters:
- 1940: no transplantation.
- 1941: 40,000 kg. from the coastal area of the North Sea off Thyborøn.
- 1942: 44,000 kg. from the coastal area of the North Sea off Thyborøn.
- 1943 and 1944: no transplantations.

B. Transplantations to the central part of the Limfjord.
- 1940: 108,000 kg. from the Nissum Broad.
- 1941: 68,000 kg. from the coastal area of the North Sea off Thyborøn.
- 1942: 84,000 kg. from the coastal area of the North Sea off Thyborøn.
- 1943: 60,000 kg. from the coastal area of the North Sea off Thyborøn.
- 1944: 60,000 kg. from the Nissum Broad.

In connexion with the transplantations markings and analyses of age, length and number of anal fin rays of samples of transplanted plaice were carried out.

5) As in previous years vertical hauls with nets of fine gauze and with the Hensen net have been made fortnightly from the following light-ships: Anholt Knob and Schultz Grund in the Kattegat and Halskov Rev in the Great Belt during the years 1940—41. In the years 1942—44 the same collections have been carried out, but with a net of stramin 1 m. in diameter.

6) Hydrographical observations as to temperature and salinity were made in connexion with the fishery investigations.

7) In the years 1940—42 informations as to the mortality of fish and certain bottom invertebrates during the severe ice-winters were gathered.

II. Work in the Laboratories.

1) Investigations of samples of fish from commercial catches have been carried out to a larger extent than normally, especially racial investigations of cod, and age and racial investigations of herring.

2) In order to follow as closely as possible the alterations which the war conditions could be supposed to cause in the fish stock as to age, size and growth, measurements have been carried out of samples of market plaice from the principal fishing harbours. The officers and men of the Danish Fishery Patrol yielded here valuable assistance.

3) As the fishery for "waste-fish", i. e. especially small herring, sprat and whiting, being used in the fish meal factories, had increased considerably during the war, several catches were analysed in order to be able to calculate the number of young food fishes destroyed by this fishery, and its possible influence upon the other fisheries. A report on this subject has been prepared.

4) In aquaria at Charlottenlund Slot varied research work has been carried out (concerning disease of fish, growth of fish and of the efficiency of certain methods of markings of fish). Further experiments were carried out as to the decrease in weight of fish living in tanks with no food available. The decrease varied between $1^1/_2$ % (flat fishes) and 5 % (cod) a week.

Hydrography.

(See the report of the Hydrographical Committee.)

Norway. (Paul Bjerkan).

The Norwegian investigations in the Skagerak and the Kattegat have been strongly hampered during the war, partly through the lack of means of locomotion — vessels, oil, etc. — partly by regulations prohibiting the waters in question to be visited.

The stock of **sprat** has passed through great variations during these years, both as to density of stock and size of fish. It was especially observed that the brood and consequently also the one-year-old fish which normally forms the bulk of the catches proved to be unusually poor after the extremely cold winters. As a result, the sprat fishery season started very late for several years. Owing to the size of the fish the fishery had to be suspended until the end of June whereas it usually begins about June first. The fishery in the Oslo fjord and off Hvaler — the only districts in the Transition Area where there used to be some sprat fishing of importance — was, during almost all the years, much below average and the fishing season was retarded as in the western sprat districts.

As far as the **prawn** fishery is concerned, the examination of the fishery in the Skagerak has resulted in new regulations being issued for the size of the prawn trawl. These regulations permit the larger-sized trawl type, which had developed in the trawl fishery in the Skagerak outside the territorial limits, to be used at depths beyond 60 m. everywhere at the coast from the Swedish boundary to Jærens Rev.

Professor Dr. Johan T. Ruud has continued his investigations in the inner part of the Oslo fjord north of Drøbak regarding "the **cod** in the Oslo fjord" with special reference to the importance of artificial hatching. During the war, however, there was no opportunity for liberating hatched cod fry since the hatching of both cod and lobster in Flødeviken was suspended.

The manager of the Flødeviken Hatchery at Flødeviken, Dr. Alf Dannevig, has not been able to make any cruises into the Skagerak during the war, but he has kept up several stations near the land, specially near Arendal.

He has maintained the production of oyster spat and made some experiments with the culture of oysters.

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Sweden. (Dr. K. A. Andersson).

At the outbreak of the war the research vessel "Skagerak" was taken over by the navy. Work at sea could therefore be carried out only on a very limited scale. In some few cases such work was done by larger chartered fishing boats. The material for our examinations has to a large extent been obtained from commercial catches.

Biology.

Herring. Numerous samples from commercial catches have during these years been examined as to race, age composition and growth. For several successive years the Swedish herring fishery in the Skagerak and the Kattegat has experienced a heavy decrease; at present, mostly smaller herring — two to three years old — are being caught. Neither has any rich year-class occurred in these waters during the period under discussion.

In the Sound, however, where the herring fishery had been poor for a long time, a strong improvement took place in 1940 and continued in 1941. This improvement was due to a rich year-class from the autumn of 1937. But already in 1942 the fishery was again decreasing and the 1937 year-class was of no further importance in the Sound. (In the Baltic it supported the fishery as late as 1944, see Baltic Area Committee.) In the Sound were also made close investigations into the changing growth-rate of the herring and its causes.

Sprat. The examinations have been continued on the same lines as hitherto. Numerous samples from the sea and from the coastal waters (inside the skerries) have been analysed as to milieu forms, age composition and growth. In connexion with this work daily reports have been collected regarding the fishing places and the landings in the most important harbours. The water exchange in the Gullmarfjord was closely investigated during autumn with the object of proving any possible correlation between this water exchange and the entrance of sprat into the "Skärgården" (the waters within the skerries). Furthermore special hydrographic observations were carried out during the unusually cold winters of 1940—42 in order to study the influence of the resulting low temperature of the water upon the growth-rate. Dr. Arvid R. Molander discusses his relevant investigations in a paper to be published in the *Annales Biologiques*, Vol. II. Furthermore was studied the correlation between the strength of the wind and the resulting motion of the sea during spring and early summer on the one hand and the strength of the year-classes on the other hand.

Finally, the formation of the winter rings in the scales of the sprat has been closely followed.

Other Fishes. A problem of outstanding consequence has turned up, i. e., the study of such changes in the stock of important bottom fishes which might have been caused by the second world war and its heavily decreased fishery in the North Sea and adjacent waters. In Sweden, this work was limited to haddock, plaice and witch. Numerous samples have been collected for this purpose from commercial catches in the Skagerak and the Kattegat. Besides, the fishermen have, according to agreement, reported on their catches of these species. Furthermore, statistics have been collected from the fishery harbour of Göteborg giving the daily landings of haddock and witch, and stating the places where the catches were made.

An examination into the growth-rate of ling has been started.

The formation of rings in the otoliths of plaice has been made the object of an investigation.

Trawlings with various Sizes of Mesh. As it is increasingly necessary, as soon as possible after the war, to protect the stock of fishes through international regulations — minimum size for meshes of trawl or similar gear — numerous fishing experiments with various mesh-sizes were carried out during March and April, 1944, from a large chartered fishing boat. These experiments were conducted by Dr. Harald Alander and were designed for supplementing previous experiences. The results are of great interest and have been published in a paper by Alander.

Shore Prawns. *Leander squilla* (L.) *forma typica* de Man has been the object of comprehensive investigations, especially regarding biology and larval development. Large-scale aquarium experiments have furthermore been carried out.

Nephrops norvegicus. The investigations have been continued. Previously collected material has been worked up and a great number of aquarium experiments have been executed.

Plankton. During the spring and early summer months plankton samples have been regularly collected in the inner fjords of the west coast where the sprat spawns, and hauls were also made for eggs and larvae of sprat; furthermore, hydrographical observations were taken in order to show the influence of the temperature of the water upon the beginning of the spawning season.

Hydrography.

(See the report of the Hydrographical Committee.)

Publications.

Harald Alander: Olika maskstorlekars inverkan på fångsten vid trålfiske. Meddel. Sv. Hydr.-Biol. Komm., Biologi, No. 2, 1945.

Arvid R. Molander: A Research upon the Sprat of the West Coast of Sweden. I. Svenska Hydrogr.-Biol. Komm. Skr., N. S., Biologi, Bd. II, No. 4. 1940.

— A Research upon the Sprat of the West Coast of Sweden. II. Svenska Hydrogr.-Biol. Komm. Skr., N. S., Biologi, Bd. II, No. 5. 1942.

— Sprat and Milieu Conditions. Ann. Biol., Vol. I. 1943.

— Rödspotta och torsk i södra Kattegatt. Medd. från Svenska Hydrogr.-Biol. Komm. Biologi, No. 1. 1944.

— The Winterrings in the Scales of the Sprat. Sv. Hydr.-Biol. Komm. Skr., Biologi, Vol. II, No. 7. 1945.

Hans Höglund: On the Biology and larval Development of *Leander squilla* (L.) *forma typica* de Man. Svenska Hydrogr.-Biol. Komm. Skr., N. S., Biologi, Bd. II, No. 6. 1943.

K. A. Andersson m. fl. författare: Fiskar och Fiske i Norden, Stockholm 1942.

K. A. Andersson: The Stock of Herring in the Skagerak, the Kattegat and the Sound in 1939. Ann. Biol., Vol. I. 1943.

BALTIC AREA COMMITTEE

1940—1944.

By

K. A. Andersson.

During the years 1940—44 work has been obstructed by the war. Large areas of the Baltic, for instance, have been barred by mines and the research vessel was either commissioned by the Navy or otherwise prevented from working. For all that the investigations have been carried out as far as was possible. Reports of work have been received from Denmark, Finland and Sweden.

Denmark (H. Blegvad).

Biology.

Cod. Measurements as well as age and race-analyses have been carried out at Bornholm during March 1944 and 1945, and south of Møen during May 1944.

Plaice, Flounder, Turbot. Fishing experiments with the Johansen young-plaice trawl have been carried out at the east coast of Sjælland, Møen and Falster during August 1941, 1943, 1944, and 1945. Fishing with the hand-push-net has taken place at the coasts of Bornholm during August of each of the years 1940—45. The aim of these investigations is to state the relative strength of the year-classes.

Herring. Race and age-analyses of herring from Bornholm have been made each year south of Møen in the autumn of 1940, 1941 and 1942.

Plankton.

Fishing experiments with the Hensen net have been carried out at Bornholm from a cutter each year; in 1940 during June—September, in 1941, 1942, and 1943 during August, in 1944 from August to September, and in 1945 during May—September. Determinations of the fat content of plankton were made from samples (according to Wimpenny's method) in 1943, 1944, and 1945. The aim of these investigations is especially to study the food conditions of the herring.

Hydrography.

Hydrographic observations were taken in connexion with the plankton work at Bornholm.

Finland.

Biology. (T. H. Järvi).

The investigations into the salmon have been carried out every year. Statistics of seal catches have been collected.

Hydrography. (E. Palmén).

(See the report of the Hydrographical Committee.)

Sweden.

Biology. (K. A. Andersson).

Work at sea could not be carried out on the same scale as in previous years. Directly upon the outbreak of war the research vessel "Skagerak" was commissioned by the Navy and the activity of the m/b "Eystrasalt" was heavily restricted by mine barrages etc. The boat has, however, been at work each year for a longer or shorter period in spring, summer, and autumn. The work was chiefly directed towards investigations of herring, and cod, but also sprat and flat-fishes were studied. The investigations were carried out by Dr. Harald Alander of the Kgl. Lantbruksstyrelsen off the south and east coasts of Sweden.

Herring. The chief object of these investigations was to show the differing strength of the year-classes within the various races; numerous fishing experiments have been carried out both along the whole length of the coast and far off the coast at sea, and a great number of samples have been collected and analysed as to race, age and growth. It resulted that the Baltic fishery, since 1940, has been based chiefly upon autumn-spawning herring, of the rich 1937 year-class. In the Bornholm area this year-class was fairly abundant in the catches already in the autumn of 1939. It was then two years old and its average length was 16 cm. This year-class can be followed up to 1944 when it still predominated in the catches. The same year-class was rich also in the Gulf of Bothnia, but the catches comprised there also a great percentage of the 1936 year-class.

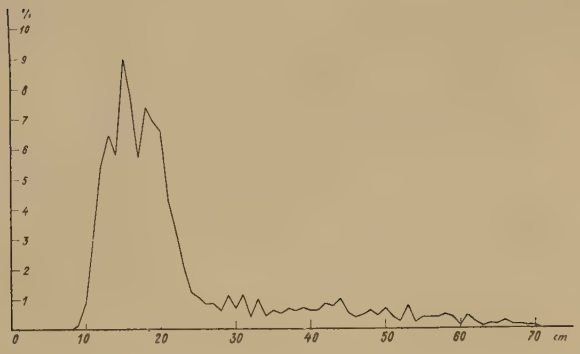

Fig. 1. Length-Curve, Cod, Bornholm Deep, May/June 1944.

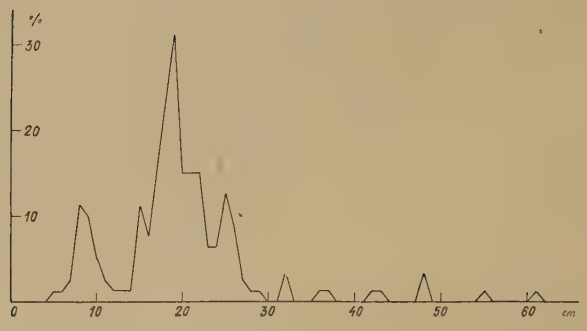

Fig. 2. Length-Curve, Cod, Bornholm Deep, 3.X.1944.

In order to examine the recruiting of the stock fishery experiments were made with very fine-meshed trawl and fine-meshed drift-nets. Any appreciable percentage of younger year-classes could be noted in the Gulf of Bothnia only where remarkable amounts of small herring of about 14 cm. length were taken by fine-meshed nets during September 1944. In the Baltic, no rich year-class seems to have occurred since the autumn of 1937.

In 1943, the fishermen started trawling for herring on a large scale in the southern Baltic. Through investigations with the m/b "Eystrasalt" it could be proved that herring, as they grow older and larger, go farther out from the coast, as was indicated already in 1940 by investigations on the "Midsjö" bank.

In September 1944 deep-sea herring fishery experiments were made for the first time in the Gulf of Bothnia; fine-meshed trawl was used at 60—90 m. depth. The sea floor there is very uneven, but the experiments met with success, and some minor catches of old large herring were taken. This seems additionally to prove that older herring in the Baltic and the Gulf of Bothnia migrate farther out to sea where they seem to prefer the deep waters.

The growth-rate of the herring was also examined. Dr. H. Alander has given some results of these investigations in a paper published in the first issue of the *Annales Biologiques*, and in the next issue Alander and K. A. Andersson will report each on these investigations into the Baltic herring.

Sprat. Fishery experiments in the southern Baltic in 1944 showed a satisfactory supply of sprat mostly of 10 to 12 cm. length.

Cod. Numerous fishery experiments with hook and trawl have been carried out in the Baltic, the Åland Sea and the Gulf of Bothnia. A great number of otoliths and scales have been collected and the cod were always measured.

In the Baltic, the catches have generally been unusually rich, in the Åland Sea and the Gulf of Bothnia they were more varying.

In the southern Baltic the catches gave in October 1943 great numbers of small cod of 6—10 cm. length, belonging probably to the 0-group. During the early summer and the autumn of 1944 this year-class could be traced in the length curves, but in the autumn another year-class, the 1944 one, came up (Figs. 1 and 2).

Cod were marked and liberated in the Hanö bay in May and off Visby in June, 1942, and in the area of Landsort in September 1944. Among those liberated off Visby some fish have been recaptured; they give evidence of remarkable migrations.

On the cruises catches have also been made for cod eggs and larvae.

Flat-Fishes. The stocks of flounder, dab and turbot were examined by way of numerous fishing experiments, especially at Gotland, and Gotska Sandön.

Plankton.

A great number of plankton samples have been taken in all the areas under observation.

Hydrography.

In conjunction with the biological investigations hydrographical observations of temperature and salinity have been taken. With regard to both data remarkable variations were ascertained. The influence of these variations upon the propagation of the herring and its growth-rate has also been studied. An account of this work will be found in the two above-mentioned papers by Alander and Andersson to appear in the next issue (No. II) of the *Annales Biologiques*. (See the report of the Hydrographical Committee, p. 44.)

Publications.

Harald Alander: Investigations on the Baltic Herring. Ann. Biol., Vol. I, p. 177, 1943.

H. Blegvad: From the Danish Biological Station, ibid., Vol. I, p. 175, 1943.

Reports of other Committees.

HYDROGRAPHICAL COMMITTEE

Report on Hydrographic Work carried out in the several Countries during the War 1939—1945.

By

Prof. Martin Knudsen.

Up to the present date (November 1945) a few countries only have given detailed reports, viz:

Denmark. (Helge Thomsen).

During the years 1940 to 1945 **hydrographical expeditions** could not be carried out to the usual areas of investigation: the North Sea and the North Atlantic. To special areas — i. e., minor limited areas — the following expeditions were made:

1) **Isefjorden.** In 1940—42 combined plankton and hydrographic investigations were made from a motor boat at monthly intervals. The hydrographic work included the determination of temperature and salinity and of nutrient salts.

2) A minor cruise to the **Limfjord near Oddesund** from June 1st to 28th, 1942. A continuous record of the current in 5 metres' depth was taken by means of Witting's current-meter, and experiments with drift-buoys were carried out in adjacent waters. The harmonic constants of the tidal current were determined.

3) An expedition to the **Limfjord**, from May 28th to September 24th, 1943, with the object of observing current, temperature, salinity, and oxygen as well as the acclivity of the sea surface caused by the wind. The expedition was made with the S/S "Biologen" under the leadership of Helge Thomsen. The resulting material consists chiefly of: —

(a) Observations of the actual hydrographic condition taken at monthly intervals. The observations were carried out in such a way that determinations of temperature, salinity and oxygen content were made at a series of stations in the shortest possible time.
(b) Daily observations of surface temperature and salinity at seven coastal stations from Hals to Thyborøn.
(c) Current measurements from the "Biologen" at anchored stations during up to 15 days.
(d) Measurements of surface currents each hour from the bridges over the Limfjord at Aalborg, Aggersund, Vilsund, and Oddesund.
(e) Registration of the sea level by means of mareographs at Hals, Løgstør, Nykøbing M., Oddesund and Thyborøn.
(f) Observations of great accuracy of the sea level, combined with measurements of current and wind in Lovns Bredning, for determining the acclivity of the sea surface caused by the wind.

4) From December 1st to 21st, 1943, hydrographic observations were made from "Biologen" in the **Isefjord** with the object of procuring information on the water exchange between the fjord and the Kattegat. The observations consisted partly of current measurements at the mouth of the fjord, partly of temperature and salinity determinations in the fjord itself.

5) In **Rudkøbing Løb** hourly measurements of the surface current were made from January 23rd to March 1st, 1944.

6) In **Grønsund** hourly measurements of the surface current were made from October 12th to 28th, 1944.

7) In collaboration between the Skalling Laboratory (Director: Professor Niels Nielsen) and "Vandbygningsvæsenet" (Department for Hydraulic Engineering) a series of hydrographical observations were carried out during the years 1938—42. Their chief aim was to give a survey of the hydrography of the Waddensea (the shallow waters at the southwestern part of Jutland) with special regard to practical results that could be of value in hydraulic engineering work and in the activity for reclaiming land. The observations comprised registrations of sea level, current measurements and salinity determinations. Furthermore, detailed analyses were made of plankton and deposits. Continuous measurements for one or more tidal periods were carried out at about 50 stations. The main part of the sea level registration took place in 1941, during a 2-monthly period. The registration was made continuously by means of 11 automatic recording tide gauges, adapted for the purpose.

Drift-bottles were not liberated during the period under consideration.

The collecting of water-samples from liners was discontinued on the line Esbjerg-Harwich in September 1939, on the line to Greenland in November 1939, and on the line to Iceland in February 1940.

The lightships Horns Rev, Vyl and Gedser Rev had been withdrawn in September 1939. From the other Danish lightships the usual hydrographic observations were carried out during the following periods (apart from withdrawals on account of ice): —

Skagens Rev: until 21. V. 1940.
Læsø Trindel: until 21. V. 1940 and from 22. VII. 1942 to 14. IV. 1943, thereafter on a somewhat changed position until 11.IV.1945.
Læsø Rende: until 21. V. 1940 and from 26. VII. 1942 to 24. X. 1942. On 6. V. 1943, the observations were resumed from a somewhat changed position until 6.I.1945.
Østre Flak: until 21. V. 1940 and from 25. VII. 1942 to 26. X. 1942.
Anholt Knob: until 22.IV.1945.
Schultz's Grund: until 15. IX. 1944.
Lappegrund: until 29.I.1945.
Drogden: until 15. XII. 1944.
Halsskov Rev: until 16.IV.1945.

Furthermore, the same observations as from the other lightvessels were made from temporarily established lightvessels, i. e.,

Langelandsbælt: from 9. XI. 1940 to 22. VII. 1942.
Western Storebælt: since 16. XI. 1940.
Samsø Bælt: from 15. XI. 1940 to 23. VII. 1942.
Aalborg Bay: from 29. IV. 1943 to 8. XI. 1943.

With regard to the surface temperature and salinity observations started at Myggenæs on the Faroes, no information has been received since April 9th, 1940.

The observations taken at the inner Danish coastal stations have been continued as before, supplemented by daily observations of temperature and salinity at various depths at

Vilsundbro: from 7. VI. 1941 and
Aggersundbro: from 1. V. 1942 to 1. VIII. 1943

as well as by daily surface observations at Roskilde, Kyndby and Bramsnæsvig from 1. XI. 1942 to 1. XI. 1943.

In the waters off Bornholm, at stations up to 90 m. depth, temperature and salinity observations have been taken from a fisherboat several times during the years from 1940 to 1944.

Dr. J. P. Jacobsen has started work in the laboratory to find out possible sources of error in the Winkler titration method for determining the amount of oxygen in sea water.

The hydrographical papers published or in preparation since 1939 are stated in the list at the end of the report.

Finland. (E. Palmén).

During the war years 1940—44 the hydrographic-chemical work in Finland has been confined to the coastal waters, as hydrographical expeditions, in the strict sense of the word, could not be carried out. Moreover, arrangements were specially made for the working up of older material. The hydrographic material from the fixed stations, with the exception of current measurements from light ships, has been published up to and including 1940, and the greater part of the material collected in later years has been finally worked up. In consequence of the preliminary conclusion of peace between Finland and U.S.S.R. in September 1944 the whole Petsamo district was surrendered to the latter power as well as great parts of the coastal area of the eastern Gulf of Finland and an area further to the west (the Porkala district); consequently, as far as Finland is concerned, the hydrographic work in these areas was abandoned.

With regard to the work carried out during the war the following may be mentioned: —

Professor E. Palmén has worked up and published sea-level observations from Hangö for the years 1904—20 and has furthermore continued his earlier investigations of the influence of meteorological factors upon the sea-level variations in the Baltic.

Professor Kurt Buch who for many years has studied the equilibrium of the carbonic-acid system in the Baltic Sea, has now published a report on his results in the *Fennia*, No. 68, of the "Geografiska Sällskapet i Finland" (Geographic Society of Finland). He has further carried out certain systematic researches of the occurrence of copper and zinc in seawater, and has started a special investigation of the hydrographic-chemical-biological conditions in the boundary zones between the Baltic and the Gulf of Bothnia.

Dr. Ilmo Hela has made a thorough examination of the variations in the daily mean sea-level of the whole Baltic Sea during the decade 1926—35, and on the basis of the resulting interdiurnal variations in the total amount of water of the Baltic area he has tried to determine the transport of water through the Danish straits. The results obtained are published in No. 134 of *Havforskningsinstitutets Skrifter* (Papers of the Institute for the Exploration of the Sea). The paper proves that continued examinations of this nature may in a large degree contribute to advance our knowledge of the daily water exchange between the Baltic and the Kattegat (North Sea).

A new calculation of the harmonic constants for the tides at a number of stations in the northern area of the Baltic has in later years been carried out by Dr. Eugenie Lisitzin. The results are published in Nos. 67 and 68 of the *Fennia* series of the Geographic Society of Finland.

Addendum.

1) No hydrographic observations were taken from liners during 1940—45.

2) The regular observations of temperature and salinity at the coastal stations of the Institute for the Exploration of the Sea have been carried out on the same scale as before, with the following interruptions, however, on account of the war or other causes.

Ulkokalla: 1944 I. — 1945 V.
Lågskär: 1940 II. — V.
Bengtskär: 1939 XII. — 1940 IV. 1941 VIII. — 1943 VI.
Russarö: 1939 XII. — 1942 IV.
Tvärminne: 1940 I. — 1942 IV.
Suursaari (Hogland): 1939 X. — 1944 IV.

In consequence of the war and the preliminary peace treaty at Moscow, September 1944, the following coastal stations have terminated their activity:

Kallbådan: 1944 X.
Suursaari (Hogland): 1944 IX.
Someri: 1939 XII.
Martinsaari: 1940 III.
Virtaniemi: 1939 XI.
Seivästö (Styrsudd): 1939 XII.

At the coast of the Arctic Ocean off Petsamo no hydrographic observations have been taken since the outbreak of the war in November 1939; since September 1944, when that area was ceded to the Soviet Union, Finland ceased to carry out any observations in the Arctic Ocean.

The regular observations from lightvessels regarding temperature, salinity and current (and wind) have been continued. In consequence of the war operations, however, the observations were discontinued at the lightvessel "Storbrotten" in 1940, at the lightvessel "Helsinki" during the period July 1941 to December 1944, and at "Kalbådagrund" in July 1941.

3) Since the outbreak of the war on November 30th, 1939, the following tidal stations ceased working: Liinahamari (Petsamo), Hangö, Viipuri (Viborg), and Koivisto. Hangö resumed work again in August 1942 and Viipuri (Viborg) during the period June 1943 to June 1944.

4) Under the direction of Professor KURT BUCH some motor-boat cruises were undertaken in 1945 into the coastal waters (skerries) off SW. Finland in order to follow more closely the general production and consumption of matter in the sea. During this work relatively long observational series were carried out, especially at the stations Utö and Lohm. Numerous water samples were then taken for determining the temperature, salinity, alkalinity, pH, the content of oxygen, phosphate, nitrate, ammonia, and silicic acid. Moreover quantitative determinations of plankton were made.

Holland. (P. M. VAN RIEL).

No hydrographic observations have been carried out in this country during the war.

Norway. (JENS EGGVIN).

I. Fiskeridirektoratet (The Fisheries Directorate), 1. I. 1940—11. V. 1945.

As far as the investigations at sea are concerned efforts have been made to maintain a certain continuity in the oceanographic work and to prevent the break of series of observations which had been planned at long sight in order to solve special problems within oceanography, of general as well as of specific character. During the war, the efforts have been successful to a certain degree, that is, in the waters off the coast and in the fjords.

Special stress was laid on rare and significant oceanographic conditions and their further development, so as to bring about a better understanding of how the changes in temperature, salinity and stability arise, and by which factors they are caused. This permitted Dr. J. EGGVIN to improve the methods for predicting oceanographic conditions.

Several cruises were planned with the object, i. a., to examine the oceanographic situation in connexion with various fisheries and to collect material for predicting the oceanographical conditions. Special endeavours were made to predict the oceanographic situation in waters where the great fisheries take place which, as experience has told us, are dependent on certain oceanographic conditions.

1. Cruises made by Research Vessels.

In the summer of 1940 a cruise was undertaken to Svalbard with the m/c "Johan Hjort", during June 28th to July 31st under the leadership of T. IVERSEN. Otherwise during the war work at sea was carried out in the waters near the coasts and in the fjords.

A total of 32 cruises were executed — 5 before April 9th, 1940 — with the m/c "Johan Hjort" and chartered boats. The several cruises lasted from 6 to 87 days. Their programme consisted of biologic as well as of oceanographic work.

The table on pp. 42—43 gives a summary of the kind and of the magnitude of the oceanographic material resulting from the cruises — excepting the material regarding the current measurements. Besides is recorded the area of investigation, the time, and the name of the operating boat.

From June 22nd to July 1st, 1943, current measurements were carried out in the Vestfjord, in the Austnesfjord in the Lofoten, and in the Eidsfjord in Vesterålen. The m/c "Johan Hjort", from which the work was done, was moored at both ends while the current was measured during two to three consecutive days. Simultaneously, temperature and salinity observations were taken every 30 minutes at standard depths between the surface and the bottom.

The cruises were carried out under the leadership of the consultants P. BJERKAN, F. DEVOLD, J. EGGVIN, T. IVERSEN and O. SUND, and the assistants T. KROG, P. SOLHEIM, and KR. WILHELMSEN. O. BOSTRØM has taken part in a series of cruises, partly

Cruises of the Norwegian Fisheries Directorate, 1940—1942.

Nos.	Date	Ship	Area	Stations Nos.	Stations Number	Number of Observations t & S	O_2	pH	P_2O_5
	1940								
1	16/1 — 2/2	"Johan Hjort"	Bergen—Utsira	1— 58	58	533	—	—	—
2	7/2 —10/3	"Johan Hjort"	Bergen—Lofoten	59—191	133	1128	180	182	182
3	23/2 — 2/3	"Brilliant"	Haugesund—Egers.	1— 12	12	89	—	—	—
4	15/3 —19/3	"Johan Hjort"	Bergen—Utsira (Rogal.)	192—207	16	142	—	10	—
5	28/3 — 9/4	"Johan Hjort"	Sognefj.—Lofoten	208—241	34	314	—	—	—
6	17/8 — 4/10	"Johan Hjort"	Nordland—Troms—Finnmark	387—502	116	1067	—	—	—
7	28/6 —31/7	"Johan Hjort"	Svalbard	254—386	33	280t 250S	—	—	—
8	26/8 —30/8	"Fro"	Hard.—S.hordland	601—609	9	72	—	—	—
9	9/12—17/12	"Von"	— —	610—620	11	82	—	—	—
					422	3707t 3677S	180	192	182
	1941								
1	9/2 — 6/3	"Von"	From Korsfj. v/Bergen to	1— 16	16	150	—	—	—
2	27/3— 8/4	"Von"	Boknfj. v/Stavgr.	17— 42	26	148	—	—	—
3	8/5 —28/5	"Fro"	Hard.—S.hordl.—Rogaland	601—619	19	187	—	—	—
4a	12/6 —16/6	"Fro"	— — —	620—621	2	19t 17S	—	—	—
4b	9/7 —23/7	"Fro"	— — —	622—640	19	176t 137S	—	—	—
5	2/10—12/11	"Johan Hjort"	— — —	89—105	17	182	182	180	156
6	6/9 —25/10	"Johan Hjort"	Northern Norway	1— 88	88	940t 937S	430	161	—
					187	1802t 1758S	612	341	156
	1942								
1	18/2 — 7/4	"Granne"	Møre—Lofoten	1—24	24	189S 188t	—	—	—
2	29/4 —15/5	"Johan Hjort"	Hardanger—Ryfylke	25— 45	21	185S 189t	98	129	124
3	10/6 —12/6 13/7 — 6/8	"Rappmotor"	— —	1— 18	18	175	—	—	—
4	30/10—12/11	"Johan Hjort"	S.hordl.—Rogal.	46— 60	15	173	—	—	—
					78	722S 725t	98	129	124

as captain of the m/c "Johan Hjort", partly as observer.

From the cruises as well as from the fixed oceanographic stations and from the thermograph service on board the liners, a total of about 23,000 water samples have been collected and analysed as to salinity, oxygen and phosphate content and pH. Temperatures were taken at about 24,000 points. To this must be added a large material originating from thermographs installed in liners.

2. The fixed Oceanographic Stations along the Norwegian Coast.

In 1935 and 1936 the following fixed oceanographic stations had been established on the coast of Norway by the Fisheries Directorate: —

1. Ingøy, the observations being taken on the banks of western Finmark, 33 nautical miles west of the North Cape.

2. Eggum, the observations being taken on the banks off Lofoten, 3·75 nautical miles N. 18° W. of Eggum light.

3. Skrova, the observations being taken in the Vestfjord, 1·7 nautical miles S. 27° W. of Skrove light.

4. Sognesjøen, the observations being taken at the mouth of the Sognefjord.

At these stations temperature observations and water samples were collected throughout the year at the following depths: 1, 10, 25, 50, 75, 100, 125, 150, 200, 250 and 300 m. The observations were repeated every two weeks during May to November and once a week during the remaining part of the year — unless prevented by rough weather or otherwise. The greatest depth of the observations was 300 m. at stations 1, 3 and 4, and 200 m. at station 2.

The material is directly despatched to the oceanographic department of the Fisheries Directorate where

Cruises of the Norwegian Fisheries Directorate, 1943—17.V.1945.

Nos.	Date	Ship	Area	Stations Nos.	Stations Number	Number of Observations t & S	O_2	pH	P_2O_5
	1943								
1	29/1 —31/3	"Gulafjord"	Møre and Lofoten	1— 21	21	152	—	—	—
2	6/5 —20/5 31/5 — 5/6 7/7 —14/7 25/7 — 8/8	"Eskimo"	Hard.—Sunnhordl.	601—634	34	336	- -	-	—
3	8/6 —16/7	"Johan Hjort"	Northern Norway (current-measurements)	26—295	218	866S 1683t	42	—	—
4	22/9 —10/10	"Johan Hjort"	Sunnhordland	296—312	17	192	39	39	38
					290	1546S 2363t	81	39	38
	1944								
1	15/1 — 7/4	"Johan Hjort"	Northern Norway especially Vestfj.	1—158	158	917t 748S	—	—	—
2	8/2 —18/2	"Svinto" and "Lura"	S.hordl.—Rogal.	1— 9	9	80t 79S	—	—	—
3	23/3 — 4/4	"Svanen"	— —	10— 24	15	138t 137S	—	—	—
4	21/4 — 4/5	"Johan Hjort"	— —	159—177	19	199	120	—	120
5	11/5 —15/5	"Eskimo"	Sogn and Sunnfj.	24— 27	4	40	40	—	—
6	13/9 —28/9	"Johan Hjort"	Hard.—Ryfylke	181—204	24	160t 131S	139	131	131
					229	1534t 1334S	299	131	251
	1945								
1	20/3 —26/3	"Signal"	Vestfjorden	1— 27	27	185			
2	1/5 — 7/5	"Eskimo"	Hardanger	I—VIII	8	78			
3	4/5 —17/5	"Melar"	Bergen—Nordfjord	601—607	7	86			
					42	349			

it is worked up as soon as received. The temperature series are sent by wire.

In spite of difficulties of various kind, i. e., minimum allotment of fuel, war risks, mine-barrages, etc., we succeeded in keeping the observational work going during the war. In 1940, however, from April 9th until the capitulation in June, all work at the stations was suspended. As far as Ingøy is concerned, the observations ceased to be taken in the autumn of 1944, when during their forced evacuation of Finmark the Germans burnt the apparatus and outfit of the station. At Skrova no observations were taken in February 1942, owing to the death of the observer.

In January 1942, two new stations were established south of Bergen, i. e., Utsira and Lista. At the former station the observations are taken at two places, at the side of the island facing the sea as well as at that facing the main-land. The greatest depths taken are 250 and 150 m. resp. At Lista, the observations are taken 1·7 nautical miles W. 27° S. of Lista light down to a depth of 300 m.

At Lista, the work was suspended from October to December, 1944, owing to mine-barrages and frequent war actions. The work was again resumed in January 1945, but at Listafjord, which is less exposed.

3. Thermograph Records.

(a) North Sea and Norwegian Sea. In September 1939 the service on the lines Bergen-Newcastle and Bergen-Rotterdam was discontinued. Between Bergen and Iceland it was continued until April 1940.

(b) The Norwegian Coast. Between Oslo and Bergen the service was kept up until September 11th, 1944, with the exception of the period April 9th to May 28th, 1940, owing to the war conditions. In 1942, from January 18th to March 31st, the route Oslo-Kristiansand was not run, owing to ice conditions. Between Bergen and Trondheim the service was interrupted during the following periods: April 5th to August 6th, 1940, December 3rd, 1943, to February 25th, 1944, and October 12th, 1944, to May, 1945. On the section Trondheim-Tromsø the

registering was stopped in 1940 only from April to about August 10th. Between Tromsø and Kirkenes the line was run until September 1941, when the increased war risk caused the express boats to desist from visiting this section. Here also the service was suspended in 1940 from April to about August 10th.

The collection of water samples from liners was carried out parallel to the thermograph service.

II. Geofysisk Institutt (The Geophysical Institute).

During the war, the oceanographical department of the Geophysical Institute has not carried out any investigations at sea, but it has taken many observations in the fjords. Since the summer of 1940 the work has been confined to the Nordfjord. In this fjord, and during the five years in question, about 25,000 temperature observations were taken by reversing thermometers and 10,000 water samples for the determination of salinity. The observations have contributed much to the understanding of the variations as to time and locality of the hydrographical conditions in a typical large fjord, and they have permitted of studying the conductivity of heat in the water. The topography of the bottom has been investigated by echo-sounding, and a detailed bottom chart of the greatest part of the fjord has been prepared. Tides and seiches have been examined through registering apparatus. Problems related to the formation of ice in the fjords have been made the object of further studies. Experiments have been carried out as to the quick registration of temperature in water and to the measuring of micro-currents (turbulence etc.). Besides the hydrographic investigations many meteorological observations and registrations of radiation have been taken. The primary work (including "dynamical calculations") of the material from the International Gulf Stream Investigations of 1938 has been completed. Dr. H. Mosby has prepared detailed charts of the currents in the Tromsøysound at various phases of tides and wind conditions and he has worked up the observations from the routes of the Norwegian-American line across the Atlantic.

Sweden. (Hans Pettersson).

Salinity and Temperature. Hydrographic observations during the war were necessarily limited to territorial waters. As the research ship "Skagerak" was taken over by the Swedish navy and used as a patrol ship already in Sept. 1939, short cruises could only be carried out by means of ships hired or lent from the Navy for particular purposes. The daily observations of salinity and temperature in different depths at Bornö Station therefore gained considerably in importance and were for a couple of years supplemented by parallel observations from another coastal observatory at Hättan near Marstrand. The results were worked up in Oceanografiska Institutet i Göteborg and published in *Svenska hydrografisk-biologiska kommissionens Fyrskeppsredogörelse*, issue for 1942/43 printed.

Current observations have only been carried out locally and for special purposes as at the entrance to Falsterbokanalen, near the harbour of Limhamn and in the entrance to the harbour of Stockholm at Oxdjupet, where also temporary daily measurements of salinity, temperature, oxygen etc. have been started in the spring of this year.

After the release of the "Skagerak" from its military service, active hydrographic and biologic work has been restarted in August of 1945.

Ice observations for the study of the meteorological and hydrographic conditions determining the formation and the breaking up of the ice on the Gullmar Fjord were carried out at Bornö Station supplemented by excursions to the icefields over the open sea during the severe winters of 1940—42. A report has been published as No. XVIII of *Svenska hydrografisk-biologiska kommissionens skrifter, Serie hydrografi*, by Dr. Nils G. Johnson. Experiments on the formation of "pannkaksis" near a boundary surface have been carried out at Oceanografiska Institutet.

A study of the heat balance of the Baltic Sea during the years based on light-ship observations and on the international cruise of 1939 has been published in *Svenska hydrografisk-biologiska kommissionens skrifter, Serie hydrografi*, No. XV, by Dr. Nils G. Johnson.

Sediment studies by means of a new technique, core samplers capable of securing profiles ranging up to 18 metres in length constructed by H. Pettersson and B. Kullenberg have been carried out in Swedish fjords and estuaries both on the west coast and in the Baltic. The cores have been studied both by chemical analysis and by pollen analysis. Short descriptions have been published in *Nature* 145 p. 306, in *Oceanografiska Institutets Meddelanden* No. 5 and in Geol. Fören. Förhandl. Bd. 66, Häfte 3. A more comprehensive publication is in preparation.

The results from the international cruise in the Baltic July-August 1939 have been published as regards the inertia currents by Kullenberg and Hela in *Svenska hydrografisk-biologiska kommissionens skrifter, Serie hydrografi*, No. XVI.

Measurements of submarine daylight and water transparency have been carried out partly by recording instruments, from Bornö Station in combination with investigations on the assimilation of macroscopic algae by Johnson in collaboration with Dr. Levring of the Botanical Institute in Göteborg. A standard instrument for transparency measurements has been constructed by Johnson, *Svenska hydrografisk-biologiska kommissionens skrifter, Serie hydrografi*, No. XIX. A new instrument has been designed by Johnson for measurements of the antirachitic components of subsurface daylight used for measurements in the Gullmar Fjord. A publication of the results is in preparation.

The conversion of submarine light measurements into energy units was taken over by Swedish hydro-

graphers in 1939 at the recommendation of the Hydrographic Committee. This task has been solved by KULLENBERG and JOHNSON who have worked out a method for expressing the results from single measurements, by means of photoelectric or rectifying cells with one colour filter, in energy units with an accuracy not less than $\pm 5\,\%$. A report on their work is being prepared for publication. Visional range below the water for objects painted in different colours has been measured both in the Gullmar Fjord at Bornö Station and on the hydrodynamic tank at Oceanografiska Institutet by Dr. FRITZ KOCZY and Dr. JOHNSON. KOCZY has also developed a camera for subsurface work and published photographs taken by means of this contrivance.

Investigations on the content of Vitamin D and its provitamins in phytoplankton, started by H. PETTERSSON before the war, have been carried further in cooperation with Statens Institut för Folkhälsan in Stockholm, where the biological tests have been carried out. Up to 60 kg. of diatoms from the spring increase in wet condition have been collected in the Gullmar Fjord and analysed for vitamin D both with and without previous irradiation with antirachitic light. The results indicate that a provitamin, probably 7-dehydrocholesterol is present in varying amount, one irradiated sample giving as much as 2800 int. units pro gramme of the oil extracted, whereas the actual content of the vitamin before irradiation was very small. The investigation is now being extended also to the provitamin content of macroscopic algae. Tests with zooplankton (*Noctiluca*) were negative. The results will be published shortly. In conjunction with these experiments the conversion of 7-dehydrocholesterol into vitamin D-III through exposure to ultraviolet daylight beneath the surface has been made at Bornö Station.

Experiments with an improved type of trawling boards have been carried out in Oceanografiska Institutet by lic. DROUGGE working under Prof. GUSTAFSSON in Lund, an investigation made possible through a grant from Statens Skeppsprovningsanstalt, where the final towing experiments were made in the large tank at 250 meters. Practical tests with a small trawl in shallow water have recently been carried out from the "Skagerak".

Large-scale culture experiments with phytoplankton were started in 1939 in the plankton shaft (2×12 metres) of Oceanografiska Institutet by Dr. FABIUS GROSS from Edinburgh with a research fellowship from Sjöfartsmuséet together with Dr. KOCZY who, in Dr. GROSS's absence during the war, carried the experiments further. Results from their investigation have been filed for publication in *Meddelanden från Oceanografiska Institutet*. In the course of this work a nephelemetric method for rapid estimates of the plankton density in pure cultures has been developed.

Attempts towards an increase of the plankton production by manuring the seawater in secluded areas, with a view of subsequent transplantation of small fish, were started already in 1936 in Klevkilen, where the topographical conditions were, however, unfavourable. Recently similar attempts have been resumed in another small fjord better suited for the purpose by Kand. Bo PETTERSSON. An increase of the flagellates in the water after manuring with nitrate and phosphate was observed, but no sensible increase in the diatom vegetation was observed.

Measurements of the rate of present sedimentation in the Gullmar Fjord by means of special sediment collectors exposed below the surface and emptied regularly have been undertaken from Bornö Station by Dr. KOCZY.

Oceanografiska Institutet in Göteborg, inaugurated in January 1939, is a gift from "Knut and Alice Wallenbergs Stiftelse" to "Göteborgs Kungl. Vetenskaps- och Vitterhetssamhälle". It has provided Swedish oceanographers with excellent laboratories and equipment for more comprehensive and specialized laboratory work such as cannot be undertaken either at Bornö Station or in Havsfiskelaboratoriet in Lysekil. The institute which comprizes a large plankton shaft, a hydrodynamic tank, chemical, physical, biological, and radioactive laboratories is in close cooperation with Svenska hydrografisk-biologiska kommissionen and also offers living rooms for resident workers.

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PLANKTON COMMITTEE

1940—1944.

By

Prof. H. H. Gran.

Denmark. (P. Jespersen).

I. Home Waters.

1. The weekly collection of plankton samples, started in 1929 from three lightships in the inner Danish waters, has been continued as far as conditions permitted during 1940 and 1941, but was discontinued at the end of 1941.

2. During the years 1940—44 the investigations into the food of herring in the Bornholm waters have been continued. As long as the herring fishery lasted, herring stomachs have been preserved on a fairly large scale, and occasional plankton samples were collected in order to follow, seasonally as well as annually, the variations in the composition and amount of herring food.

3. Phytoplankton material of various kinds collected in the inner Danish waters by Danish liners and by the research vessels "Dana" and "Biologen" has been worked up.

4. In the Isefjord, Sealand, the following work has been carried out during the years 1940—43 in order to ascertain the conditions of production in this fjord area: systematic collections of plankton, hydrographic observations and investigations into the fixed growth of algae and seagrass. Besides, assimilation experiments have been made at the various depths with plankton in genuine concentrations, and in cooperation with the Nautical Department of the Meteorological Institute daily observations of temperature and salinity were collected at 5 stations in the fjord area from November 1942 to November 1943.

5. An investigation of the flagellate *Prymnesium parvum* which has caused a certain amount of mortality among fish in brackish water has been provisionally finished and a report has been published.

6. In cooperation with the Biological Station, the lake of Søllerød, Sealand, has been examined every fortnight during the years 1943 and 1944 as to hydrography, plankton and production of material.

7. Since the autumn of 1944, weekly plankton collections have been carried out at one single place at the Sealand coast of the Sound.

8. At the "Danmarks Akvarium" assimilation experiments have been carried out with some relatively important sea algae together with a special investigation into the influence of hydrogen-ion concentration and carbonic acid upon the growth of aquatic plants. Finally, the photosynthesis process itself has been made the object of investigations on the basis of various experiments.

II. Northern Waters.

1. A survey has been prepared of the occurrence and biology of various marine copepods in the waters round Iceland.

2. A paper has been published on the conditions of production of phytoplankton in the waters round Iceland and the Faroes in the spring months. In the same paper are given the results of some quantitative zooplankton investigations.

3. A quantitative investigation into the occurrence of the most important organisms of zooplankton in Icelandic waters — at the various seasons as well as along the various Icelandic coasts — has been finished and a report on the subject has been written.

4. A study has been made of the food of the herring — on the basis of stomach analyses — and of the amount and composition of zooplankton during 1936 and 1937 in the waters around the Faroes (and the Shetland islands); a paper on the results has been published.

5. An investigation that had been started concerning phytoplankton organisms of the North Atlantic is being continued.

III. Publications.

Jespersen, Poul: Investigations on the Quantity and Distribution of Zooplankton in Icelandic Waters. Medd. Kom. Danmarks Fiskeri- og Havunders., Ser. Plankton, Bd. III, 5. 1940.

— The Zoology of Iceland. Non-parasitic Copepoda. The Zoology of Iceland, Vol. III, Part 33. Copenhagen 1940.

— Investigations on the Food of the Herring and the Macroplankton in the Waters round the Faroes. Medd. Kom. Danmarks Fiskeri- og Havunders., Ser. Plankton, Bd. III, 7. 1944.

Nielsen, E. Steemann: Über die vertikale Verbreitung der Phytoplanktonten im Meere. Intern. Rev. ges. Hydrobiol. u. Hydrogr., Bd. 38. 1939.
— Über das Verhältnis zwischen Verwandtschaft und Verbreitung von Organismen in Beziehung zu ökologischen Studien auf Grundlage der Verbreitung. Kgl. Danske Vid. Selskab, Biol. Meddel., XVI, 4. 1941.
— Die Produktionsbedingungen des Phytoplanktons im Übergangsgebiet zwischen der Nord- und Ostsee. Medd. Kom. Danmarks Fiskeri- og Havunders., Ser. Plankton, Bd. III, 4. 1940.
— Der Mechanismus der Photosynthese. Untersuchungen mit *Fucus serratus* und anderen Submersen. Dansk Botanisk Arkiv, Bd. 11, 2. 1942.
— Über das Frühlingsplankton bei Island und den Faröer-Inseln. Medd. Kom. Danm. Fiskeri- og Havunders., Ser. Plankton, Bd. III, 6. 1943.
— Havets Planteverden i økologisk og produktionsbiologisk Belysning. Skrift. Kom. Danm. Fiskeri- og Havunders. 13. 1944.
— Dependence of Freshwater Plants on Quantity of Carbondioxide and hydrogen ion Concentration. Illustrated through experimental Investigations. Dansk Botanisk Arkiv. Bd. 11. 8. 1944.
Otterstrøm, C. V. & E. Steemann Nielsen: Two Cases of extensive Mortality in Fishes caused by the Flagellate *Prymnesium parvum*, Carter. Rep. Dan. Biol. Stat., XLIV, 1939.

Éire. (G. P. Farran).

In the absence of a research vessel it was not possible to carry out any fresh investigations at sea since 1939. The plankton collected by ringtrawl on April 17th—21st, 1939, on the mackerel spawning grounds to the south-west of Ireland has been sorted, the mackerel eggs having been identified at the Marine Biological Association's laboratory at Plymouth. Some previously collected material showing the diurnal vertical migrations of plankton was worked out and it is hoped that the results will shortly be published.

England. (F. S. Russell).

Plankton research in the British Isles has been practically at a standstill since 1939 because of the absence of the majority of workers on war duties.

Some of the results of research carried out before the war have, however, been published and the following list of such reports should serve the purpose of bringing readers up to date. Among these reports special mention should be made of the new publication *Hull Bulletins of Marine Ecology* of which the first ten numbers have been published, and the first number of which was not issued until the autumn of 1939.

Attention might also be drawn to the fact that in 1942 an experiment was started to test the possibility of increasing the fertility of a small sea loch (18 acres) by the addition of nitrate and phosphate fertilizers, with the view of improving the growth rate and yield of fish. A very marked increase in plankton production, in bottom fauna and in the growth rate of plaice and flounders was recorded.

H. W. Harvey, 1942: Production of life in the sea. Biological Reviews, Vol. 17, pp. 221—246.
F. Gross, Raymont, J. E. G., Marshall, S. M. & Orr, A. P., 1942: A fish-farming experiment in a sea loch. Nature, Vol. 153, pp. 483—485.
F. Gross & J. E. G. Raymont, 1942: The Specific Gravity of *Calanus finmarchicus*. Proc. Roy. Soc. Edinburgh, Vol. LXI, pp. 288—296.
R. Gurney & M. V. Lebour, 1939: The Larvae of the Decapod Genus *Naushonia*. Ann. Mag. Nat. Hist., Ser. 11, Vol. III, No. 18, pp. 609—614.
M. V. Lebour & R. Gurney, 1940: Larvae of Decapod Crustacea. Part VI. The Genus *Sergestes*. Discovery Reports, Vol. XX, pp. 1—67.
R. Gurney & M. V. Lebour, 1941: On the Larvae of certain Crustacea Macrura, mainly from Bermuda. Journ. Limn. Soc., Zool. Vol. XLI (No. 277), pp. 89—181.
T. John Hart, 1942: Phytoplankton Periodicity in Antarctic Surface Waters. Discovery Reports. Vol. XXI, pp. 261—356.
M. V. Lebour, 1941: Notes on Thalassinid and Processid Larvae (Crustacea Decapoda) from Bermuda. Ann. Mag. Nat. Hist., Ser. 11, Vol. VII, No. 41, pp. 401—420.
— 1943: The Larvae of the Genus *Porcellana* (Crustacea Decapoda) and Related Forms. Journ. Mar. Biol. Assoc., Vol. XXV, pp. 721—737.
— 1944: The Larval Stages of *Portumnus* (Crustacea Brachyura) with notes on some other Genera. Journ. Mar. Biol. Assoc., Vol. XXVI, pp. 7—15.
— 1944: Larval Crabs from Bermuda. Zoologica, Sci. Contrib. New York Zool. Soc., Vol. XXIX. Pt. 3, pp. 113—128.
— 1945: The Eggs and Larvae of some Prosobranchs from Bermuda. Proc. Zool. Soc., Vol. 114, Part IV, pp. 462—489.
J. E. G. Raymont & F. Gross, 1942: On the Feeding and Breeding of *Calanus finmarchicus* under Laboratory Conditions. Proc. Roy. Soc. Edinburgh, Vol. LXI, pp. 267—287.
R. S. Wimpenny, 1944: Plankton Production between the Yorkshire coast and the Dogger Bank, 1933—1939. Journ. Mar. Biol. Assoc., Vol. XXVI, pp. 1—6.

Hull Bulletins of Marine Ecology: —
No. 1. Ecological Investigations with the Continuous Plankton Recorder: Object, Plan and Methods. By A. C. Hardy.
No. 2. Ibid.: Summary List of Records, 1932—37.
No. 3. Ibid.: The Phytoplankton of the Southern North Sea, 1932—37. By C. E. Lucas.
No. 4. Ibid.: The Copepoda of the Southern North Sea 1932—37. By K. M. Rae and J. H. Fraser.
No. 5. Ecological Relations between the Herring and the Plankton off the North-east Coast of England. By C. Cheng.
No. 6. Ecological Investigations with the Continuous Plankton Recorder: The Zooplankton (other than Copepoda) of the Southern North Sea 1932—37. By G. T. D. Henderson and N. B. Marshall.

No. 7. Continuous Plankton Records: General Introduction to the 1938—39 Survey. By A. C. Hardy.
No. 8. Ibid.: Phytoplankton in the North Sea, 1938—39, Part I, Diatoms. By C. E. Lucas (assisted by W. Macnae).
No. 9. Ibid.: Phytoplankton in the North Sea, 1938—39, Part II, Dinoflagellates, Phaeocystis, etc. By C. E. Lucas.
No. 10. Ibid.: The Faroe-Shetland Channel, 1939. By C. E. Lucas, N. B. Marshall and C. B. Rees.

France. (L. Fage).

Les recherches à la mer ont été impossibles, pendant toute la durée des hostilités. Mais l'étude du matériel précédemment récolté a été poursuivi malgré les entraves multiples dues à la guerre et à l'occupation.

Un important mémoire dû au Prof. Francis Bernard, relatif aux facteurs de répartition des Flagellés calcaires, a été publié en 1942. Dans ce mémoire sont envisagés la distribution d'ensemble des Coccolithophorides, l'importance relative des espèces, le domaine des races localisées, la biologie des principales formes dans les eaux éclairées et en eau profonde et enfin les conditions de prédominance des Flagellés calcaires dans le plancton.

La même année, le Prof. M. Rose, consacrait une étude aux Copépodes pélagiques de la baie d'Alger appartenant à la famille des Scolecitricidés et le Dr. G. Trégouboff apportait une contribution étendue à nos connaissances, jusque là fort incertaines, des larves planctoniques d'Eponges.

Tandisque Mme A. Pruvot-Fol étudiait les Gymnosomes du "Dana" le Prof. L. Fage a consacré deux fascicules du *Dana-Report* à l'étude systématique et biologique des Mysidacés pélagiques appartenant au sous-ordre des Lophogastrides. Il a publié également un travail sur les Cumacés du plancton nocturne des côtes d'Annam dans lequel la biologie des espèces étudiées est comparée à celle des mers d'Europe.

Le Dr. H. Nouvel a fait connaître les Mysidacés et le Dr. G. Ranson, les Scyphoméduses provenant des Campagnes du Prince de Monaco.

Le Prof. R. Hovasse s'est spécialement occupé des Silico-flagellés dont il a décrit des formes nouvelles provenant du détroit de Gibraltar.

Publications.

Francis Bernard: Essai sur les facteurs de répartition des Flagellés calcaires. Ann. Inst. Océan. 1942, XXI, fasc. 2, p. 29 à 112.
Maurice Rose: Les *Scolecithricidae* (Copépodes pélagiques de la baie d'Alger). Ann. Inst. Ocean. 1942, XXI, fasc. 3, p. 113 à 170.
G. Trégouboff: Contribution à la connaissance des larves planctoniques d'Eponges. Arch. Zool. Exp., 1942, T. 82, fasc. 6, p. 357 à 399.
L. Fage: Mysidacea-Lophogastrida. Dana-Report, Nos. 19 (1941) et 23 (1942), 52 et 65 pages.
— Les Cumacés du plankton nocturne des côtes d'Annam. Arch. Zool. Exp., 1945, T. 84, fasc. 3, p. 165—224.
A. Pruvot-Fol: Les Gymnosomes. Dana-Report, No. 20 (1942).
H. Nouvel: Mysidacés, in Résultats des Campagnes du Prince Albert Ier de Monaco, fasc. CV, 128 p.
G. Ranson: Scyphoméduses, ibid., fasc. CVI, 95 p.
R. Hovasse: Deux formes de Silico-flagellés nouvelles pour la faune actuelle provenant du détroit de Gibraltar. Bull. Inst. Ocean. Monaco, No. 788.

Norway. (H. H. Gran).

University of Oslo, Botanical Laboratory.

The investigations in the Oslo Fjord with special reference to the effect of pollution upon the biological conditions in the fjord were continued during the summer of 1939. The investigations were carried out in collaboration partly with the Biological laboratory (Dr. Ruud), partly with Flödevigen Hatchery (Dr. Dannevig). Besides studies of the phytoplankton (E. Birkenes) investigations were carried out on light absorption in the different parts of the fjord (A. Buvig). An apparatus for photoelectric light measurements similar to that previously used by E. Steemann Nielsen was used.

From 1940 to 1945 our work in the fjord could not be carried on, but laboratory studies on important phytoplankton species from the polluted part of the fjord were continued (T. Braarud, I. Pappas, E. Rossavik, K. Ödegård).

Quantitative phytoplankton samples from the western fjord Nordåsvatn, covering a whole year, collected by Mr. Kr. Fr. Wiborg of the Fisheries Directorate, Bergen, was worked up (B. Hope).

Mrs. Karen Ringdal Gaarder continued her studies on the plankton material from the "Michael Sars" expedition, 1910, and finished her report on the Tintinnoidea. The work on diatoms and dinoflagellates is far advanced.

In collaboration with the Oceanographic Department of the Fisheries Directorate, Bergen (Dr. Eggvin), a phytoplankton material for quantitative studies is being collected from stations along the Norwegian coast, intended to cover one year.

During the period the following papers have been printed or sent to press:

Braarud, Trygve: Observations on the Phytoplankton of the Oslo Fjord, March-April, 1937. Nytt Magasin f. Naturvidensk. 80. Oslo 1939.
— Planteplanktonets höstmaksimum ved Norskekysten. Blyttia, 2. Oslo 1944.
— A Phytoplankton Survey of the Polluted Waters of Inner Oslo Fjord. Det Norske Vidensk.-Akad. i Oslo. Hvalrådets Skr., No. 28. Oslo 1945.
— Experimental Studies on Marine Plankton Diatoms. Avh. utgitt av Det Norske Vidensk.-Akademi i Oslo. I Mat.-Naturv. Kl. 1944, No. 10. Oslo 1945.
— Morphological Studies on Marine Dinoflagellate Cultures. (*Porella perforata*, *Goniaulax Tamarensis*, *Protoceratium reticulatum*). Ibidem, No. 11. Oslo 1945.
— Forurensning og selvrensning av sjövann. Undersökelser i Oslofjorden. Naturen, No. 7—8. Bergen 1945.

Bräarud, Trygve: The Form Variation in *Sceletonema costatum* and its Bearing on the Supply of Silica in Diatom cultures. Nytt Magasin f. Naturvidensk. (In press).

— and Else Fagerland Dannevig: *Syracosphaera Carterae* n. sp., a coccolithophoride in laboratory Culture. Nytt Magasin f. Naturvidensk. (In press).

Gaarder, Karen Ringdal: Tintinnoidea. Report on the Scientific Results of the "Michael Sars" North Atlantic Deep-Sea Expedition 1910. (In press).

Rustad, Einar: Experiments on Photosynthesis and Respiration at Different Depths in the Oslo Fjord. Nytt Magasin f. Naturvidensk. Oslo. (In press).

Wiull, Gunvor: The Phytoplankton of the Oslo Fjord, 1937—38. Nytt Magasin f. Naturvidensk., Oslo. (In press).

The following papers have not yet been published, but are deposited at the Secretariate of the University, Oslo:

Birkenes, Erling: Fytoplanktonundersökelser og hydrografiske observasjoner i Oslofjorden, sommeren 1939. (1941).

Buvig, Arne: Undersökelser over lysforholdene i Oslofjorden og i en del ferskvann. (1942).

Hope, Brigt: En helårsundersökelse av fytoplanktonet i en Vestlandsfjord. (1943).

Pappas, Irene: En eksperimentell studie av *Peridinium triquetrum*, særlig dens forhold til vekslende saltholdighet og næringssaltkonsentrasjon. (1942).

Rossavik, Ellen: En eksperimentell studie av *Prorocentrum micans*. (1943).

Ödegård, Knut F.: Virkningen av gifter på marine planktonorganismer i Oslofjorden. En eksperimentell studie med henblik på saprobieproblemet i sjövann. (1943).

Biological Laboratory.

The zooplankton material from the Oslo Fjord 1933—34 had been worked up by Mr. Kr. Fr. Wiborg, and the report was published in 1940.

Wiborg, K. F.: The Production of Zooplankton in the Oslo Fjord in 1933—34. With special reference to the copepods. Det Norske Vidensk.-Akad. i Oslo. Hvalrådets Skr., No. 21. Oslo 1940.

Fisheries Directorate, Bergen.

A hydrographic-biological study of the land-locked fjord Nordåsvatn, near Bergen, comprising hydrography (temperature, salinity, oxygen content), phytoplankton and zooplankton has been carried out during a whole year. The results have been presented in a report on the phytoplankton by B. Hope (see above) and the following paper on the hydrography and zooplankton:

Wiborg, K. F.: The Production of Zooplankton in a Landlocked Fjord, the Nordåsvatn near Bergen, in 1941—42. Fiskeridirek. Skr. Ser.: Havunders. VII, No. 7. Bergen.

SALMON AND TROUT COMMITTEE

1940—1945.

Denmark. (C. V. Otterstrøm).

The biological survey of streams has been continued according to the principles given in Rep. No. XLII of the Danish Biological Station; a total of 38 streams and systems of streams has been examined and plans for the liberation of salmon and trout fry have been worked out (Knud Larsen: The Liberation of Salmon and Trout Fry in Denmark, Rep. Dan. Biol. Stat., XLVII). — Further experiments have been made concerning the examination of facilities for fish to pass turbines of various construction (C. V. Otterstrøm: Turbines and Descending Salmon and Trout Smolts (and Eels). Rep. Dan. Biol. Stat., XLVII). Laboratory experiments have been carried out with the object of finding out how fish can be led to the fish-passes and prevented from taking undesired courses (Frode Bramsnæs, Mogens Jul & C. V. Otterstrøm: Barriers against Fishes by Means of Electricity or Veils of Air. Rep. Dan. Biol. Stat., XLVII); it is intended to put these experiments to practical tests. Scale samples have been collected of salmon, trout, grayling (Knud Larsen: Lidt om Væksten hos Stalling (*Thymallus thymallus* L.) i Danmark. Sportsfiskeren, June 1941), and a few specimens of *Coregonus lavaretus*. Investigations of smelt have been started.

Finland. (T. H. Järvi).

Material for scale analysis of salmon was collected in the years 1940—1944 in Tornio, Kemi (estuary) and Oulu rivers.

Salmon fry were liberated as follows:

1939: in Paatsjoki (Petsamo), 50,000; in the river Kemi, 330,000; in the river Iijoki, 44,300; in the river Oulu, 283,600; in the river Kymi, 15,000. The total number of salmon fry distributed was 722,900. — One-summer-old parr were liberated as follows: in the river Kemi, 29,480 and in the river Oulu, 19,500 making a total of 48,980 individuals. Trout fry were liberated in the river Sjundeå (south Finland), 35,000.

1940: Salmon fry were liberated in Paatsjoki (Petsamo), 50,000; in the river Kemi, 463,200; in the river Oulu, 197,300; in the river Kokemäki, 24,400. The total number 734,900. One-summer-old parr were liberated in the river Kemi, 25,325; in the river Oulu, 9,500; i. e., 34,825 individuals.

1941: Only 23,000 trout fry were liberated in the river Kymi.

1942: Neither salmon nor trout fry nor parr were liberated.

1943: No liberations.

1944: 87,000 salmon fry were distributed in the river Oulu.

Norway. (Knut Dahl).

The salmon fisheries have during the war been more or less influenced by the conditions created by the German occupation. As to the actual yield of the salmon fisheries statistics are not at present available. The publication of statistical data has been prohibited and the results from report have not yet been published. The research work on salmon and trout has been limited to a few attempts at marking in 1940, but owing to the conditions created by the war marking has been discontinued.

Our main work has consisted in preparing for publication the data available from previous research, and the following papers have been published: —

K. Dahl and S. Sømme: Salmon Marking in Norway 1938, 1939 and 1940. Skr. utg. av Det Norske Vidensk.-Akad. i Oslo, I, Mat.-Naturv. Klasse, 1941, No. 10.

Sven Sømme: On the High Age of Smolts at Migration in Northern Norway. Avhandl. utg. av Det Norske Vidensk.-Akad. i Oslo, I, Mat.-Naturv. Kl., 1941, No. 16.

Knut Dahl and Eyvind Dahl: Norges Lakse-elver. Deres utbytte i tabeller og grafer. Landbruks dept., Fiskerikontoret, Oslo, 1942.

Knut Dahl and Olaug Sømme: The Sexual Maturing of Salmon. Skr. utg. av Det Norske Vidensk.-Akad. i Oslo, I., Mat.-Naturv. Kl., 1944, No. 7.

Sweden. (N. Rosén).

The examination of salmon scales collected during previous years from the west coast has been continued and will soon be concluded. A report is in preparation.

Small Salmon from the coast of Norrland and Lule river and kelts from the rivers Mörrum, Indal and Ume, used in artificial fertilization, have been marked.

Researches concerning the heredity of several characters of the different types of trout are carried on since several years, especially as to the relation between heredity and milieu.

Eggs of salmon and trout have been hatched at a number of places.

The results of experiments on fertilization with salmon-parr have been published (G. Alm, Meddelande från Statens undersöknings- och försöksanstalt för sötvattensfisket, No. 22. Stockholm 1943), as well as the results of researches on the fertilization and development of salmon (A. Lindroth, ibid. No. 19, 1942), on markings of Väner-salmon (N. Törnqvist, ibid., No. 17, 1940), and on the age and growth of Väner-salmon (S. Runnström, ibid., No. 18, 1940).

Catch:	Baltic	Öresund-Kattegat Skagerak
Salmon:		
1939	200,603	19,282 kg
1940	171,591	22,581 -
1941	263,221	16,307 -
1942	342,395	11,968 -
Sea-Trout:		
1939	86,582	18,090 -
1940	69,764	12,836 -
1941	66,777	11,491 -
1942	52,532	14,239 -
Sturgeon sold at Gothenburg:		
1939	372 kg	
1940	130 -	
1941	245 -	
1942	452 -	
1943	241 -	
1944	328 -	